

SURVIVING The Nurse Entrance Exam

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Today schools use the nurse entrance exams as a tool to determine educational deficiencies and strengths. Unfortunately many are now using the exams to determine which applicants to choose for their programs. Those who test poorly, even though they have the skills and compassion necessary will be turned away. Most schools now require a score of 50% to 75% for admission. On the nurse entrance exam applicants are tested on reading comprehension, basic math skills, word usage, and grammar, spelling and basic science. Most questions are at the 6th to 10th grade level. It's important to study and review first. Those who take the test without a review do not do as well as those who have adequately prepared. Most schools allow students to re-test up to three times. A testing session may cost up to \$80 – so it make sense to study and review before taking the test. If an applicant scores low it may indicate the need for additional preparation and the need to take classes in English, Math or Science.

The most important test taking strategy to use: Read the question TWICE – do not look for the RIGHT ANSWER instead ELIMINATE the WRONG ANSWERS before choosing the correct answer. Always answer every question. Even if you have no idea – you will have a 25% chance if you just answer the question. Sometimes there are obvious wrong answers – eliminate those first. You can raise your chance to 50% if you can recognize the one or two obviously wrong answers.

Reading Comprehension - this is always tested on every nurse entrance exam. For the reading, applicants will be tested on their reading speed. With this section it is important to read as quickly as possible while still retaining the information. The next section asks the applicant to determine the main idea and topics of paragraphs. Here are some tips for that section:

Once you can find the topic, you are ready to find the main idea. **The main idea is the point of the paragraph. It is the most important thought about the topic.**

To figure out the main idea, ask yourself this question: What is being said about the person, thing, or idea (the topic)?

The author can locate the main idea in different places within a paragraph. **The main idea is usually a sentence, and it is usually the first sentence.** The writer then uses the rest of the paragraph to support the main idea.

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Let's use the paragraph below as an example. **First find the topic, and then look for the main idea.**



Summer is a wonderful time to spend at West Beach. It is a beach with light-Colored, soft sand. The coastline goes on for a long way and many people enjoy walking along it. Children like to play in the surf and walk along the rocks that are visible at low tide. This is a fun beach for people of all ages.

In this paragraph:

- ♦ the topic is *West Beach*
- ♦ the main idea (what the writer is saying about the topic) is that summer is a wonderful time at *West Beach*

Here is another example:

The movie Apollo 13 was a blockbuster for the summer of 1995. It is an exciting story about space exploration. In the movie, the astronauts get in trouble while they are trying to return to Earth. People in the audience are on the edge of their seats waiting to see what happens. What makes it even more exciting is that it is a true story.



In this paragraph:

- ♦ the topic is the movie *Apollo 13*
- ♦ the main idea is in the first sentence: *Apollo 13 was a blockbuster for the summer of 1995*

While the main idea is usually in the first sentence, the next most common placement is in the last sentence of a paragraph. The author gives supporting information first and then makes the point in the last sentence.

Here's a paragraph we can use as an example. Try to locate the topic and the main idea.

Most teenagers and young adults do not know what they want to do for the rest of their lives. It is a big decision. There are a number of things you can do to narrow the choices. For example you can take an interest test, do some research on your own about a career, try volunteer work in the field in which you are interested, or "job-shadow", in which you spend a day with a person who is working in a field that interests you. These are just a few helpful ideas as you begin to choose a career.

In this paragraph:

- ♦ the topic is *jobs or career choices*
- ♦ the main idea is a few ideas to help the reader choose a career

Spelling Demons – words that are commonly misspelled

about	friends	probably	tomorrow
address	fuel	party	tonight
advise	getting	peace	traveling
again	goes	people	trouble
all right	grade	piece	truly
along	guard	played	until
already	guess	poison	used
although	half	practice	vacation
always	handkerchief	pretty	very
among	having	principal	what
arithmetic	hear	quarter	when
aunt	heard	quit	wear
awhile	height	quite	where
balloon	hello	raise	whether
because	here	read	weather
been	hospital	receive	weigh
before	hour	remember	were
birthday	house	right	we're
blue	instead	rough	when
bought	knew	route	where
built	know	said	which
busy	laid	says	white
buy	lessons	school	who
children	letter	several	whole
chocolate	little	skiing	women
choose	loose	something	would
close	loving	soon	writing
color	laugh	store	wrote
come	let's	straight	
coming	making	studying	
cough	many	sugar	
could	maybe	suppose	
country	minute	surely	
cousin	morning	surprise	
cupboard	mother	surrounded	
dairy	name	swimming	
dear	neither	teacher	
decorate	nice	tear	
didn't	none	terrible	
doctor	o'clock	threw	

doesn't	often	through	
early	once	tired	
easy	outside	together	
enough	no	too	write
especially	off	trouble	your
everybody	one	two	you're
favorite	our	until	
February	people	usually	
first			
forty			
fourth			

More Spelling Demons

Ten Tough Spelling Words—and Ways to Make Them Tender

1. **traveler.** The British spell it with two *r*'s, but Americans don't double-up, except in accented syllables (such as *controlled*, *referral*, *propeller*).
2. **coolly.** Here, you're just adding the suffix to the root. (I know it still looks funny. But it's right. Trust me.)
3. **embarrass.** Two *r*'s and two *s*'s. But then again, we have *harass*.
4. **unparalleled.** Memorize this sucker. There's no other way around it.
5. **nickel.** Is there any justice in the world?
6. **glamour.** We can deal with this ... but what about glamorous?
7. **resuscitate.** That's why people learn CPR; they're too busy being heroes (not heros) to spell what they just did.
8. **genealogy.** Like its first cousins *mineralogy* and *analogy*, one of a few words that doesn't end with *-ology*.
9. **pavilion.** That's what we get for taking words from the French. *Cotillion* and *vermilion* also pose difficulty.
10. **dysfunction.** Because so many people have it, better learn how to spell it (maybe a cure is easier?).

Strictly Speaking

So what's it going to be: *harebrained* or *hairbrained*? (The former, as in *harelip*.)

Still game? Here's a list of spelling demons you're likely to encounter in daily life.

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abbreviate	cellophane	February	journal
abyss	debtor	fickle	journeying
academic	decided	gallery	juvenile
ache	defense	ghetto	keenness
adjacent	deferred	grammar	kindliness
allotted	delicious	guess	laboratory
bachelor	deluge	handicapped	larceny
balloon	ecstasy	heaviness	legend
bicycle	efficient	height	leisure
bigamy	eighth	heroes	maintain
budget	eligible	icing	marmalade
bureau	emperor	icy	marriage
capsule	emphasis	illegally	mathematics
career	fascinate	illogical	neutral
carnival	feasible	jeopardy	niece
ninety	opponents	rabid	sincerely
notary	pageant	rebelled	sugar
obnoxious	papal	rebuttal	treachery
obstinate	parallel	referee	turkeys
offensive	paralysis	_____	_____
_____	_____	_____	_____

Vocabulary – You will be asked to give the definition of a word in a sentence. The best way to do this is to eliminate the wrong answers and look at the context of the sentence.

Parts of Speech – You should have a review because this will be on the test. Most of us learned this in elementary school – a long, long, time ago. A review will serve you well on the entrance exam. Especially when the question asks you to pick out the noun in the sentence.

NOUN: a person, place, or thing. Can be the subject or object of a sentence. Ex: cat, horse, mother, Denmark

PRONOUN: a word that replaces or stands for ("pro" = for) a noun. Ex: he, she, it

VERB: an action word. Ex: sit, laugh, screw

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ADJECTIVE: a word that describes or modifies a noun. Answers the questions "how many," "what kind," etc. Ex: happy, suicidal, red, dangerous

ADVERB: a word that describes or modifies a verb. Ex: carefully, quickly, wisely. Also sometimes modifies an adjective. ("She was very tall." 'Very' is an adverb modifying 'tall,' which in turn is an adjective modifying 'she'.) Adverbs usually, but not always, end in "-ly". (However, not every word ending in "ly" is an adverb: "friendly," for example, is an adjective.)

PREPOSITION: (literally "pre-position") a word that indicates the relationship of a noun (or noun phrase) to another word. Examples of prepositions are to, at, with, for, against, across. ([Ending a sentence with a preposition](#))

Putting Words Together

PHRASE: an expression (can be a single word, but usually more) which contains a single thought but is not necessarily a complete sentence. Words make up phrases; phrases make up sentences. By some definitions, a phrase cannot contain a verb.

PREPOSITIONAL PHRASE: A phrase beginning with a preposition. Heh, heh. You could have figured that out, right? Example:

I am sitting in the bushes.	"I am sitting" is a complete sentence unto itself; it contains a subject ("I") and a verb ("am sitting"). The phrase "in the bushes" is a prepositional phrase ("in" being the preposition) that expands upon the basic concept.
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SENTENCE: the basic unit of writing. A sentence should have a subject and a predicate. The subject is the noun to which the sentence's verb refers; the predicate is the verb plus whatever other parts modify or elaborate on it. Example:

My mother sings.	"My" is a possessive pronoun; "mother" is the subject (noun); "sings" is the verb.
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There are several types of sentences. The major ones are:

DECLARATIVE: The majority of sentences are declarative. A declarative sentence makes a statement. This sentence is declarative, as are the previous two.

INTERROGATORY: An interrogatory sentence asks a question. Do you understand that? Which of these sentences is an example?

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IMPERATIVE: An imperative sentence gives a command. Ex: "Shut up and kiss me." Note that an imperative sentence does not require a subject; the pronoun "you" is implied.

RUN-ON SENTENCE: A sentence that is too long and should be broken into two or more sentences. One sentence should present one basic concept; if it presents more than that, it may be a run-on. A large number of "and"s, "but"s, and similar joining words is one warning sign of a run-on.

SENTENCE FRAGMENT: A phrase that is acting like a sentence but is incomplete. Examples:

My favorite color.	This is not a sentence because it contains no verb.
Walking very slowly.	This is not a sentence because it contains no noun.
On the table.	This is not a sentence because it contains neither a verb nor a subject.

PUNCTUATION – this will also be on the test – so prepare

Period : Use a period to end a complete sentence. A sentence is a group of words containing a subject and predicate. In British English a period is called a 'full stop'.

Comma: There are a number of different uses for commas in English. Commas are used to:

- ◆ Separate a list of items. This is one of the most common uses of a comma. Notice that a comma is included before the conjunction 'and' which comes before the final element of a list.

*Examples: I like reading, listening to music, taking long walks, and visiting with my friends.
They would like books, magazines, DVDs, video cassettes, and other learning materials for their library.*

- ◆ Separate phrases (clauses). This is especially true after a beginning dependent clause or a long prepositional phrase.

*Examples: In order to qualify for your certificate, you will need to take the TOEFL exam.
Although he wanted to come, he wasn't able to attend the course.*

- ◆ Separate two independent clauses that are connected by a conjunction such as 'but'.

*Examples: They wanted to purchase a new car, but their financial situation would not allow it.
I'd really enjoy seeing a film this evening, and I'd like to go out for a drink.*

- ◆ Introduce a direct quote (as opposed to indirect speech i.e. He said he wanted to come ...).

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*Examples: The boy said, "My father is often away during the week on business trips."
His doctor replied, "If you don't stop smoking, you run the risk of a heart attack."*

- ◆ Separate appositives (a noun, or noun phrase) or non-defining relative clauses.

*Examples: Bill Gates, the richest man in the world, comes from Seattle.
My only sister, who is a fantastic tennis player, is in great shape.*

Question Mark: The question mark is used at the end of a question.

Examples: Where do you live? How long have they been studying?

Exclamation Point: The exclamation point is used at the end of a sentence to indicate great surprise. It is also used for emphasis when making a point. Be careful not to use an exclamation point too often.

Examples: That ride was fantastic! I can't believe he is going to marry her!

Semicolon: There are two uses for a semicolon -

- ◆ To separate two independent clauses. One or both of the clauses are short and the ideas expressed are usually very similar.

Examples: He loves studying; He can't get enough of school. What an incredible situation; it must make you nervous.

- ◆ To separate groups of words that are themselves separated by commas.

Examples:

*I took a holiday and played golf, which I love; read a lot, which I needed to do; and slept late, which I hadn't done for quite a while.
They plan to study German, for their travels; chemistry, for their work; and literature, for their own enjoyment.*

Colon

A colon can be used for two purposes:

- ◆ To provide additional details and explanation.

Examples:

*He had many reasons for joining the club: to get in shape, to make new friends, to lose some weight, and to get out of the house.
She gave notice for the following reasons: bad pay, horrible hours, poor relations with colleagues, and her boss.*

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♦ To introduce a direct quote (a comma can also be used in this situation).

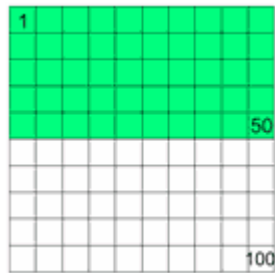
Examples:

He announced to his friends: "I'm getting married!"
She cried out: "I never want to see you again!"

MATH – always a challenge for most test-takers – fractions, decimals, algebra, graphs, simple math and ratios will BE ON THE TEST – so prepare!

Converting Between Percentage and Decimal

Percentage means "per 100", so **50%** means 50 per 100, or simply $\frac{50}{100}$.



If you divide 50 by 100 you get **0.5** (a decimal number).

So, to convert from percentage to decimal: divide by 100 (and remove the "%" sign).

The easiest way to divide by 100 is to **move the decimal point 2 places to the left.**

So:

From Percent	To Decimal	
75%	0.75	0.75
		move the decimal point 2 places to the left , and remove the "%" sign.

Example: Convert 8.5% to decimal

Move the decimal point two places: 8.5 -> 0.85 -> 0.085

Answer **8.5% = 0.085**

5% is 0.05 or 1/20; 1% is 0.01 or 1/100; 10% is 0.1 or 1/10; 20% is 0.2 or 1/5; and 100% is 1.0; 25% is .25 or 1/4 - remembering these will help on the exam.

CHANGING FRACTIONS INTO DECIMALS

In this Lesson, we will answer the following:

1. What is a "decimal"?
2. If the denominator is not a power of 10, how can we change the fraction to a decimal?
Frequent decimals and percents: Half, quarters, eighths, fifths.

Section 2

3. What is a general method for expressing a fraction as decimal? Exact versus inexact decimals.

- 1.** What is a "decimal"?

$$.123 = \frac{123}{1000}$$

A "decimal" is a fraction whose denominator we do not write but which we understand to be a power of 10.

The number of *decimal digits* to the right of the

decimal point, indicates the number of *zeros* in the denominator.

Example 1.

$$.8 = \frac{8}{10} \quad \text{One decimal digit; one 0 in the denominator.}$$

$$.08 = \frac{8}{100} \quad \text{Two decimal digits; two 0's in the denominator.}$$

$$.008 = \frac{8}{1000} \quad \text{Three decimal digits; three 0's in the denominator.}$$

And so on.

The number of [decimal digits](#) indicates the power of 10.

Example 2. Write as a decimal: $\frac{614}{100,000}$

$$\text{Answer. } \frac{614}{100,000} = .00614$$

Five 0's in the denominator indicate five digits after the decimal point.

The five 0's in the denominator is *not* the number of 0's in the decimal!

Alternatively, in Lesson 10 we introduced the [division bar](#), and in [Lesson 3](#) we saw how to divide a whole number by a power of 10.

$$\frac{614}{100,000} = 614 \div 100,000 = .00614$$

Starting at the right of 614, separate five decimal digits.

Example 3. Write this mixed number as a decimal: $6\frac{49}{100}$

Answer. $6\frac{49}{100} = 6.49$

The whole number 6 does not change. We simply replace the common fraction $\frac{49}{100}$ with the decimal .49.

Example 4. Write this mixed number with a common fraction: 9.0012

Answer. $9.0012 = 9\frac{12}{10,000}$

Again, the whole number does not change. We replace the decimal .0012 with the common fraction $\frac{12}{10,000}$. The decimal .0012 has four decimal digits. The denominator 10,000 is a 1 followed by four 0's.

This accounts for fractions whose denominator is already a power of 10.

2. If the denominator is not a power of 10, how can we change the fraction to a decimal?

$$\frac{9}{25} = ?$$

Make the denominator a power of 10 by multiplying it or dividing it.

Example 5. Write $\frac{9}{25}$ as a decimal.

Solution. 25 is not a power of 10, but we can easily make it a power of 10 -- we can make it 100 -- by multiplying it by 4. We must also, then, multiply the numerator by 4.

$$\frac{9}{25} = \frac{?}{100} = \frac{36}{100} = .36$$

4×9
 \downarrow
 4×25

COMMON FRACTIONS
PROPER FRACTIONS
MIXED NUMBERS
IMPROPER FRACTIONS



What you see above is called a number line. On it will be the numbers we need for measuring. But measuring is very different from counting. We count with the [natural numbers](#) -- 1 person, 2 persons, and 3 persons -- and each 1 is indivisible. You cannot take half of any 1. But when we measure length, for example, then if the [unit](#) of measure were 1 centimeter, then a length might be half a centimeter, or a quarter, or a millionth! Our idea of length is that it is [continuous](#). In order to measure, then, we must have *numbers* that are [parts](#) of number 1. That gives rise to a new and very different kind of number. What we call a *proper fraction* is a number *less* than 1. It is a *part* of 1.



1. What is a *common fraction*?

A number written with a numerator and a denominator, in which

both are natural numbers.

Example 1. $\frac{3}{10}$ ("Three-tenths") is a common fraction. It is in contrast to .3, which is a decimal fraction, or simply a decimal.

The **numerator** of $\frac{3}{10}$ is 3. The **denominator** is 10. They are called the **terms** of the fraction.

2. What do the denominator and the numerator signify?

The denominator names the number of *equal parts* into which number 1 has been divided.

The numerator names *how many* of those parts.



The fraction $\frac{3}{10}$ signifies that number 1 has been divided into 10 equal parts, and that we are counting 3 of them.

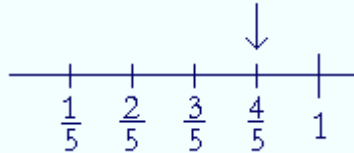
Number 1, in other words, has been divided into *tenths*. At this point, the student should be clear about the language of division into equal parts, and why we use **ordinal numbers**. See Lesson 2, the topic Division into equal parts.

Throughout we will speak of "number 1." We mean not only the idea of 1, but whatever the unit of measure might be. 1 centimeter, 1 inch, 1 pound, 1 hour. For, fractions are numbers we require only for measuring.

A fraction is often identified with a *part* of a whole. But a fraction is not simply a part of any whole. A fraction is a *number* that is a part of the unit of measure, which is 1. A pie divided into equal parts can be, and should be, described verbally -- not with fractions. We do not measure pies. We will go into this more below.

Example 2. If number 1 is divided into 5 equal parts, and we count 4 of them, what fraction is that? Also, into *which* parts has number 1 been divided?

Answer. That fraction is $\frac{4}{5}$ ("Four-fifths").



Number 1 has been divided into *fifths*.

Note: To divide number 1 into *fifths*, we cut the line *four* times. We cut the line **one less than the name of the part**.

3. What is a *proper* fraction?

$$\frac{2}{3}$$

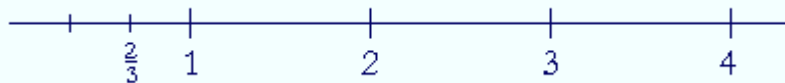
A fraction that is *less* than 1.

4. How can we recognize a proper fraction?

$$\frac{2}{3}$$

The numerator is smaller than the denominator.

$\frac{2}{3}$ ("two-thirds") is a proper fraction. It is less than 1.



On the **number line**, it falls to the left of 1. Specifically, $\frac{2}{3}$ is **two thirds** of 1, as we will see presently.

5. In English, how are the proper fractions named?

$$\frac{1}{2}$$

Since the numerator and denominator are natural numbers, they have a **ratio** to one another. And a proper fraction has the *same name* as that ratio.

Example 3. The number we write as 1 over 2 -- $\frac{1}{2}$ -- is called "one-half" because of the ratio of 1 to 2. 1 is *one half* of 2.
And that proper fraction itself is one half of 1.



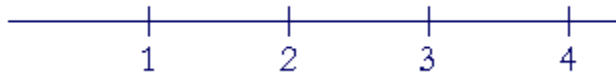
We write the name of a fraction hyphenated, but the name of a part, or of a ratio, unhyphenated. We explain why [below](#).

Example 4. Why is this number $\frac{3}{4}$ called "three-fourths"?

Answer. Because of the **ratio** of 3 to 4. 3 is *three fourths* of 4.

Ratio to 1

A fraction is a number; and as any number we know it relative to 1.



What is our understanding of "2"? It is twice as much as 1. What is "3"? It is three times 1.

Every number has a **ratio**, a relationship, to 1. It is according to that ratio that we *know* each number.

What ratio, then, has $\frac{1}{2}$ to 1?

$\frac{1}{2}$ is *one half* of 1.



$\frac{1}{2}$ has the same ratio to 1 as the numerator has to the denominator.

$\frac{1}{2}$ is to 1 as 1 is to 2.

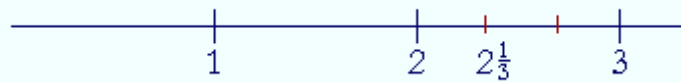
1 is one half of 2. And the fraction $\frac{1}{2}$ is one half of 1.

What is a

mixed number?	
	$2\frac{1}{3} = 2 + \frac{1}{3}$
	A whole number plus a <i>proper</i> fraction.

Example 9. $2\frac{1}{3}$ -- "2 and one-third" -- is a mixed number. It is 2 *plus* $\frac{1}{3}$.

The *and* in "2 and one-third" means plus.



To place $2\frac{1}{3}$ on the number line, the unit between 2 and 3 must be cut into thirds. We cut the line twice.

Problem. Answer with a mixed number or with a whole number and a remainder, whichever makes sense.

- How many basketball teams -- 5 on a team -- can you make from 23 students?
- You are going on a trip of 23 miles, and you have gone a fifth of the distance. How far have you gone?

Answers.

a) $\begin{array}{r} 4 \text{ R } 3 \\ 5 \overline{)23} \end{array}$ We can make 4 teams from 23 students. 3 will be left out. ($4\frac{3}{5}$ teams makes no sense.)

b) $\begin{array}{r} 4\frac{3}{5} \\ 5 \overline{)23} \end{array}$ A fifth of 23 miles is $4\frac{3}{5}$ miles. We consider 1 mile to have any part at all.

8. What is an improper fraction?	
	$\frac{8}{3}$
	A fraction greater than or equal to 1.

We can recognize an improper fraction when the numerator is greater than or equal to the denominator.

In fact, when the numerator is equal to the denominator,

$$\frac{1}{5} \quad \frac{2}{5} \quad \frac{3}{5} \quad \frac{4}{5} \quad \frac{5}{5} = 1$$

then the fraction is equal to 1.

$$\frac{5}{5} = \frac{6}{6} = \frac{7}{7} = \frac{8}{8} = 1.$$

We say that those fractions also are improper.

See the [next Lesson](#), Example 4.

Problem. Which of these fractions are less than 1, equal to 1, or greater than 1?

$$\frac{2}{3}, \frac{3}{2}, \frac{8}{5}, \frac{8}{8}, \frac{8}{9}, \frac{9}{9}, \frac{10}{9}$$

- 9.** How do we change an improper fraction to a mixed number or a whole number?

$$\frac{9}{2} = 4\frac{1}{2}$$

Divide the numerator by the denominator. Write the quotient (4), and write the remainder (1) as the numerator of the fraction; do not change the denominator.

When we change an improper fraction to a mixed number, we say that we are **extracting**, or taking out, the whole number..

Example 10. Extract the whole number from $\frac{43}{5}$.

Solution. $\frac{43}{5} = 8\frac{3}{5}$

"5 goes into 43 eight (8) times (40) with 3 left over."

We have extracted the whole number 8.

$$\frac{43}{5} = \frac{40+3}{5} = 8 + \frac{3}{5} = 8\frac{3}{5}$$

Compare [Lesson 10, Division](#).

To extract whole numbers, the student should not have to write the division box! ([Lesson 12](#).)

Example 11. $\frac{32}{9} = 3\frac{5}{9}$

"9 goes into 32 three (3) times (27) with remainder 5."

The remainder is what we must [add](#) to 27 to get 32. (Lesson 10.)

Example 12. $\frac{28}{4} = 7$

"4 goes into 28 seven (7) times exactly."

10. How do we change a mixed number to an improper fraction?

$$4\frac{1}{2} = \frac{9}{2}$$

Multiply the whole number (4) by the denominator (2), and add the numerator (1).

Write that sum (9) as the numerator of the improper fraction. Keep the same denominator.

Examples. $2\frac{3}{5} = \frac{13}{5}$

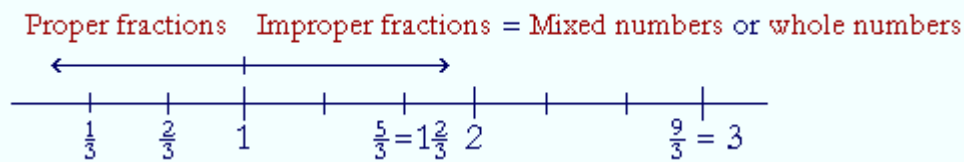
"5 times 2 is 10, plus 3 is 13; over 5."

$$3\frac{5}{8} = \frac{29}{8}$$

"8 times 3 is 24, plus 5 is 29; over 8."

To summarize: Fractions that are *less* than 1 are called **proper** fractions, while fractions greater than or equal to 1 are **improper**.

Improper fractions are equivalent to **mixed numbers** or **whole numbers**.



ADDING AND SUBTRACTING FRACTIONS AND MIXED NUMBERS

To add or subtract anything, the **units** -- the *names* of what we are counting -- must be the same.

$$2 \text{ apples} + 3 \text{ apples} = 5 \text{ apples.}$$

We cannot add 2 apples plus 3 oranges -- at least not until we call them "pieces of fruit"!

In the name of a fraction -- "4 tenths," for example -- the unit is the denominator, *tenths*. ([Lesson 20](#).)

$$4 \text{ tenths} + 5 \text{ tenths} = 9 \text{ tenths.}$$

1. How do we add or subtract fractions?

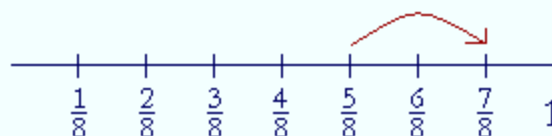
$$\frac{4}{10} + \frac{5}{10} = \frac{9}{10}$$

The units -- the denominators -- must be the same. Add or subtract only the numerators, and keep that same denominator.

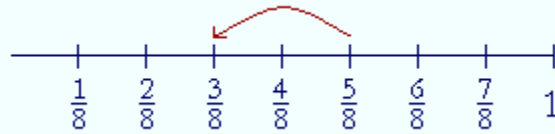
Example 1. $\frac{5}{8} + \frac{2}{8} = \frac{7}{8}$.

"5 eighths + 2 eighths = 7 eighths."

The unit is $\frac{1}{8}$. We are adding *eighths*. ([Lesson 20](#).)



Example 2. $\frac{5}{8} - \frac{2}{8} = \frac{3}{8}$.



Fractions with different denominators

To add or subtract fractions, the denominators *must* be the same. Therefore before continuing, the student should know how to convert to an equivalent fraction. See [Lesson 21, Examples 1, 2, 3, and especially Example 4.](#)

- 2.** How do we add or subtract fractions that do not have the same denominator?

$$\frac{2}{3} + \frac{1}{4}$$

Convert each fraction to an equivalent fraction with the *same* denominator.

- 3.** What number should we choose as the common denominator?

Choose a common multiple of the original denominators. Choose their *lowest* common multiple.

We choose a common *multiple* of the denominators, because we change a denominator by *multiplying* it!

$$\frac{2}{3} + \frac{1}{4}$$

Example 3.

Solution. The lowest common multiple of 3 and 4 is their product, 12.

We will convert each fraction to an equivalent fraction with denominator 12.

$$\frac{2}{3} + \frac{1}{4} = \frac{8}{12} + \frac{3}{12}$$

$$= \frac{11}{12}$$

We converted $\frac{2}{3}$ to $\frac{8}{12}$ by saying, "3 goes into 12 *four* times. Four times 2 is 8."

We converted $\frac{1}{4}$ to $\frac{3}{12}$ by saying, "4 goes into 12 *three* times. Three times 1 is 3."

In practice, it is necessary to write the common denominator only once:

$$\frac{2}{3} + \frac{1}{4} = \frac{8+3}{12} = \frac{11}{12}$$

Example 4. $\frac{4}{5} + \frac{2}{15}$

Solution. The LCM of 5 and 15 is 15. Therefore,

$$\frac{4}{5} + \frac{2}{15} = \frac{12+2}{15} = \frac{14}{15}$$

We changed $\frac{4}{5}$ to $\frac{12}{15}$ by saying, "5 goes into 15 *three* times. Three times 4 is 12."

We did not change $\frac{2}{15}$, because we are not changing the denominator

Example 5. $\frac{2}{3} + \frac{1}{6} + \frac{7}{12}$

Solution. The LCM of 3, 6, and 12 is 12.

$$\begin{aligned} \frac{2}{3} + \frac{1}{6} + \frac{7}{12} &= \frac{8+2+7}{12} \\ &= \frac{17}{12} \\ &= 1\frac{5}{12} \end{aligned}$$

We converted $\frac{2}{3}$ to $\frac{8}{12}$ by saying, "3 goes into 12 *four* times. Four times 2 is 8."

We converted $\frac{1}{6}$ to $\frac{2}{12}$ by saying, "6 goes into 12 *two* times. Two

times 1 is 2."

We did not change $\frac{7}{12}$, because we are not changing the denominator 12.

Finally, we changed the improper fraction $\frac{17}{12}$ to $1\frac{5}{12}$ by dividing 17 by 12.

"12 goes into 17 one (1) time with remainder 5."

Example 6. $\frac{5}{6} + \frac{7}{9}$

Solution. The LCM of 6 and 9 is 18.

$$\frac{5}{6} + \frac{7}{9} = \frac{15+14}{18} = \frac{29}{18} = 1\frac{11}{18}$$

We changed $\frac{5}{6}$ to $\frac{15}{18}$ by multiplying both terms by 3.

We changed $\frac{7}{9}$ to $\frac{14}{18}$ by multiplying both terms by 2.

Example 7. Add mentally $\frac{1}{2} + \frac{1}{4}$.

Answer. $\frac{1}{2}$ is how many $\frac{1}{4}$'s?

$$\frac{1}{2} = \frac{2}{4}$$

Just as 1 is half of 2, so 2 is half of 4. Therefore,

$$\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$$

The student should not have to write any problem in which one of the fractions is $\frac{1}{2}$, and the denominator of the other is even.

For example,

$$\frac{1}{2} + \frac{2}{10} = \frac{7}{10}$$

because $1 = \frac{5}{5}$.

2 10

How do we add
mixed numbers?

$$4\frac{3}{8} + 2\frac{2}{8}$$

Add the whole numbers and add
the fractions separately.

Example 9. $4\frac{3}{8} + 2\frac{2}{8} = 6\frac{5}{8}$.

Example 10. $3\frac{2}{5} + 1\frac{4}{5} = 4\frac{6}{5}$.

But $\frac{6}{5}$ is improper, we must change it to a [mixed number](#):

$$\frac{6}{5} = 1\frac{1}{5}$$

Therefore,

$$4\frac{6}{5} = 4 + 1\frac{1}{5} = 5\frac{1}{5}$$

Example 11.

$$\begin{array}{r} 6\frac{3}{4} \\ + 3\frac{5}{8} \\ \hline \end{array}$$

Solution. When the denominators are different, we may arrange the work vertically; although that is not necessary.

To add the fractions, the denominators must be the same. The LCM

of 4 and 8 is 8. We will change $\frac{3}{4}$ to $\frac{6}{8}$ -- by multiplying both terms by 2:

$$\begin{array}{r} 6\frac{3}{4} = 6\frac{6}{8} \\ + 3\frac{5}{8} = 3\frac{5}{8} \\ \hline 9\frac{11}{8} = 9 + 1\frac{3}{8} \\ = 10\frac{3}{8} \end{array}$$

We added $6 + 3 = 9$. $\frac{6}{8} + \frac{5}{8} = \frac{11}{8} = 1\frac{3}{8}$.

$$9 + 1 = \frac{8}{8} + \frac{8}{8} = \frac{16}{8} = 2$$

Percents are Ratios

The ratio to 100%.

Percent increase or decrease. Estimations

One number is some percent of another number."

" ____ is ____% of ____."

We call that the **standard form**. For example,

8 is 50% of 16.

Every statement of percent therefore involves three numbers. 8 is called the Amount. 50% is the Percent. 16 is called the Base. The Base always follows "of." And in the standard form, it will be the last number.

The standard form is the same as the form in which we express a **ratio**:

8 is half of 16.

For a percent is a ratio, which is a relationship between two numbers. What ratio has 8 to 16? 8 is half of 16, or, in the language of percent, 8 is 50% of 16.

In this Lesson, we emphasize going back and forth between those two languages.

1. How do percents express ratios?

Whatever ratio the percent has to 100 percent, the percent *means* that ratio.

What ratio is each of the following?

50%.

Half. Because 50 is half of 100.

25%.

A quarter, or a fourth. Because 25 is a quarter of 100.

$33\frac{1}{3}\%$.

A third. Because if we divide 100 by 3, we get $33\frac{1}{3}$. ([Lesson 15.](#))

33 $\frac{1}{3}$ is a third of 100.

200%.

Two times, or twice as much. Because 200 is two times 100.

250%.

Two and a half times. Because 250 is two and a half times 100.
([Lesson 17, Question 6.](#))

1000%.

Ten times. Because 1000 is ten times 100.

Whatever ratio the percent has to 100 percent, that is the ratio we mean.

Upon completing [Problem 1](#) at the end of this Lesson, the student will have a firm basis in the language of percent.

The Amount

Example 1. How much is 100% of 12?

Answer. 12. 100% is the whole thing.

Example 2. How much is 200% of 12?

Answer. 24. 200% is twice as much as 100%.

Example 3. How much is 300% of 12?

Answer. 36. 300% is three times 100%.

Example 4. How much is 50% of 12?

Answer. Translate immediately into the language of ratio: "How much is *half* of 12?" Answer: 6.

Example 5. How much is $33\frac{1}{3}\%$ of 12?

3

Translate: "How much is a third of 12?" A third of 12 is 4.

Example 6. How much is 350% of 12?

Basic Science – It's on the test!

Atoms and Elements

All things are made of a substance called matter. You can think of matter as everything that is not empty space. Many people believe that the space around them is empty space. While this may be true for an astronaut on a space walk, it is not true for us here on earth.

So what kind of matter surrounds you in this "empty" space? Well, one would hope that air would be in the vicinity. Although we cannot see the air, it is all around us. Air is made of tiny units of matter, moving rapidly and bouncing off one another and other things. What can make up substances that are so important but invisible?

All matter (including the air we breathe) is composed of very tiny, basic units called atoms. First let us find out what particles make up the atom. An atom is composed of three types of subatomic particles:

- ◆ protons,
- ◆ electrons,
- ◆ and neutrons.

These subatomic particles make up the atoms that make up **all** matter, both living and nonliving!

If everything is made up of atoms, then how can all matter be so different? Atoms can have different numbers of protons, electrons, and neutrons. These different numbers of subatomic particles define the different elements. An element is a pure substance made up of only one kind of atom. Examples of different elements include Hydrogen, Carbon, Sulfur, Oxygen, Nitrogen and Phosphorus. There are many more elements such as Gold, Silver, Mercury or Uranium, but the elements listed first are the ones that generally compose organic matter.

Different elements have very different physical properties or characteristics. Atoms of the same element have the same number of protons, electrons, and neutrons. However, atoms of different elements have different numbers of protons, electrons, and neutrons. All protons are identical to one another, as are all electrons and all neutrons. It is only the **number** of these subatomic particles that creates the different properties found among the elements.

The periodic table is an arrangement of the elements by increasing atomic number. Since the electrons add to energy levels in a regular pattern, elements with similar chemical properties tend to repeat

themselves with a set period. This allows the table to be constructed such that elements that are most alike in chemical properties are in the same column.

The chemical properties of an atom are determined largely by how full or empty the outer electron shell is. For example, atoms of fluorine(F), chlorine(Cl) and the other elements in that second from the last column of the periodic table need only one electron to fill the outer shell. These atoms have a very strong tendency to steal electrons from other atoms. Oxygen and sulphur have 6 electrons in their outer shell which again holds 8 maximum. Thus these elements tend to steal electrons.

Elements such as Lithium(Li) Sodium(Na) and Potassium(K) on the left hand side of the periodic table have an almost empty shell and these elements readily give up those outer shell electrons to atoms such as oxygen and chlorine. Elements that tend to give up electrons to other atoms are called metals.

Elements in the middle of the periodic table tend to share electrons rather than give them up or take them entirely. Many of these such as iron, copper or gold are also considered metals.

The elements at the far right: Helium, Neon, Argon etc... are chemically inert because they have a full outer shell. They will only react with other chemicals under very special conditions. These elements are sometimes called the 'noble' or inert gases because it is so difficult to get them to form chemical bonds.

Periodic Table of the Elements

	1A																2	
1	H																He	
2	Li	Be															Ne	
3	Na	Mg															Ar	
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
6	Cs	Ba	*La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
7	Fr	Ra	+Ac	Rf	Ha	106	107	108	109	110								

* Lanthanide Series

58	59	60	61	62	63	64	65	66	67	68	69	70	71
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu

+ Actinide Series

90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

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Physics is the scientific study of matter and energy and how they interact with each other. This energy can take the form of motion, light, electricity, radiation, gravity . . . just about anything, honestly. Physics deals with matter on scales ranging from sub-atomic particles (i.e. the particles that make up the atom and the particles that make up *those* particles) to stars and even entire galaxies.

Over the years, one thing scientists have discovered is that nature is generally more complex than we give it credit for. The following laws of physics are considered fundamental, but many of them refer to idealized, closed systems, which are hard to obtain in the real world. Also, some are altered slightly in different circumstances. The laws that Newton developed, for example, are modified by the findings of the theory of relativity, but they are still basically valid in most regular cases that you'll run into. Sir Isaac Newton developed the Three Laws of Motion, which describe basic rules about how the motion of physical objects change. Newton was able to define the fundamental relationship between the acceleration of an object and the total forces acting upon it.

"Law" of Gravity: Newton developed his "Law of Gravity" to explain the attractive force between a pair of masses. In the twentieth century, it became clear that this is not the whole story, as Einstein's theory of general relativity has provided a more comprehensive explanation for the phenomenon of gravity. Still, Newton's law of gravity is an accurate low-energy approximation that works for most of the cases that you'll explore in physics.

Your basic knowledge of different areas of science will be tested. The questions are multiple choice. Some deal with basic **biology and the cell – others with basic anatomy. If you lack this knowledge a review is recommended.**

A sample question for anatomy might be:

What muscle is involved with respiration?

- A. Deltoid
- B. Biceps
- C. Diaphragm
- D. Gluteus Maximus

The correct answer is C.

Test Taking Strategies – this is also tested

All of the questions are multiple choice. There is usually an obvious wrong answer - eliminate it. Some of the questions for the math section are so obvious you don't really need to do the math to figure them out.

An example of a common sense math question:

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What is the sum of $.07 + .007 + .7 + 7$?

Right away you need to determine that the right answer is more than 7. So you may be given the following to choose from:

- A. 17.77
- B. .7777
- C. 7.777
- D. 9.27

With this you can eliminate 17.77 – too much; .7777 – not enough and 9.27 is also too high.

Do the simple questions first and go back to the questions that you are having difficulty with because the test is timed.

Read each question twice before answering. Look for words like ALWAYS, NEVER, MOST and EXCEPT.

Be careful with questions that are asking you to find the wrong answer: All of the following are true about the cell membrane EXCEPT: With this question you must look for the WRONG answer.

Eliminate the obviously wrong answers. If in doubt – guess. Also your first answer is right most of the time – so go with your first answer.

Do not spend too much time on one question – go back to the difficult questions after answering those that are simple for you. Most important – answer every question – it's better to guess and have a 25% chance of getting it right than to have a 0% chance by not answering it.

GOOD LUCK!!!! REMEMBER TO ELIMINATE WRONG ANSWERS FIRST AND READ THE QUESTION TWICE. Don't look at the answers until you are finished. Very tempting – but don't do it!!! This will help you study the things you are weak in.

Here are some sample practice questions similar to those on the TEAS and other nurse entrance exams:

Practice Questions - Algebra

1. If Lynn can type a page in p minutes, what piece of the page can she do in 5 minutes?

- A. $5/p$ B. $p - 5$ C. $p + 5$ D. $p/5$ E. $1 - p + 5$

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2. If Sally can paint a house in 4 hours, and John can paint the same house in 6 hour, how long will it take for both of them to paint the house together?

- A. 2 hours and 24 minutes B. 3 hours and 12 minutes C. 3 hours and 44 minutes
D. 4 hours and 10 minutes E. 4 hours and 33 minutes

3. Employees of a discount appliance store receive an additional 20% off of the lowest price on an item. If an employee purchases a dishwasher during a 15% off sale, how much will he pay if the dishwasher originally cost \$450?

- A. \$280.90 B. \$287 C. \$292.50
D. \$306 E. \$333.89

4. The sales price of a car is \$12,590, which is 20% off the original price. What is the original price?

- A. \$14,310.40 B. \$14,990.90 C. \$15,290.70
D. \$15,737.50 E. \$16,935.80

5. Solve the following equation for A : $2A/3 = 8 + 4A$

- A. -2.4
B. 2.4
C. 1.3
D. -1.3
E. 0

6. If Leah is 6 years older than Sue, and John is 5 years older than Leah, and the total of their ages is 41. Then how old is Sue?

- A. 8 B. 10 C. 14 D. 19 E. 21

7. Alfred wants to invest \$4,000 at 6% simple interest rate for 5 years. How much interest will he receive?

- A. \$240 B. \$480 C. \$720 D. \$960 E. \$1,200

8. Jim is able to sell a hand-carved statue for \$670 which was a 35% profit over his cost. How much did the statue originally cost him?

- A. \$496.30
B. \$512.40
C. \$555.40
D. \$574.90
E. \$588.20

9. The city council has decided to add a 0.3% tax on motel and hotel rooms. If a traveler spends the night in a motel room that costs \$55 before taxes, how much will the city receive in taxes from him?

- A. 10 cents B. 11 cents C. 15 cents D. 17 cents E. 21 cents

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10. A student receives his grade report from a local community college, but the GPA is smudged. He took the following classes: a 2 hour credit art, a 3 hour credit history, a 4 hour credit science course, a 3 hour credit mathematics course, and a 1 hour science lab. He received a "B" in the art class, an "A" in the history class, a "C" in the science class, a "B" in the mathematics class, and an "A" in the science lab. What was his GPA if the letter grades are based on a 4 point scale? (A=4, B=3, C=2, D=1, F=0)

- A. 2.7
- B. 2.8
- C. 3.0
- D. 3.1
- E. 3.2

11. Simon arrived at work at 8:15 A.M. and left work at 10: 30 P.M. If Simon gets paid by the hour at a rate of \$10 and time and $\frac{1}{2}$ for any hours worked over 8 in a day. How much did Simon get paid?

- A. \$120.25
- B. \$160.75
- C. \$173.75
- D. \$180
- E. \$182.50

12. Grace has 16 jellybeans in her pocket. She has 8 red ones, 4 green ones, and 4 blue ones. What is the minimum number of jellybeans she must take out of her pocket to ensure that she has one of each color?

- A. 4
- B. 8
- C. 12
- D. 13
- E. 16

13. If $r = 5z$ then $15z = 3y$, then $r =$

- A. y
- B. $2y$
- C. $5y$
- D. $10y$
- E. $15y$

14. If 300 jellybeans cost you x dollars. How many jellybeans can you purchase for 50 cents at the same rate?

- A. $150/x$
- B. $150x$
- C. $6x$
- D. $1500/x$
- E. $600x$

15. Lee worked 22 hours this week and made \$132. If she works 15 hours next week at the same pay rate, how much will she make?

- A. \$57
- B. \$90
- C. \$104
- D. \$112
- E. \$122

16. If $8x + 5x + 2x + 4x = 114$, the $5x + 3 =$

- A. 12
- B. 25
- C. 33
- D. 47
- E. 86

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17. You need to purchase a textbook for nursing school. The book cost \$80.00, and the sales tax where you are purchasing the book is 8.25%. You have \$100. How much change will you receive back?

- A. \$5.20 B. \$7.35 C. \$13.40 D. \$19.95 E. \$21.25

18. You purchase a car making a down payment of \$3,000 and 6 monthly payments of \$225. How much have you paid so far for the car?

- A. \$3225 B. \$4350 C. \$5375 D. \$6550 E. \$6398

19. Your supervisor instructs you to purchase 240 pens and 6 staplers for the nurse's station. Pens are purchased in sets of 6 for \$2.35 per pack. Staplers are sold in sets of 2 for 12.95. How much will purchasing these products cost?

- A. \$132.85 B. \$145.75 C. \$162.90 D. \$225.25 E. \$226.75

20. If $y = 3$, then $y^3(y^3 - y) =$

- A. 300 B. 459 C. 648 D. 999 E. 1099

Answer Key

1. A 2. A

3. D, *Sale Price* = $\$450 - 0.15 * \$450 = \$382.50$, *Employee Price* = $\$382.50 - 0.2 * \$382.50 = \$306$

4. D, $\$12,590 = \text{Original Price} - 0.2 * \text{Original Price} = 0.8 * \text{Original Price}$, *Original Price* = $\$12,590 / 0.8 = \$15,737.50$

5. A 6. A 7. E

8. A, $\$670 = \text{Cost} + 0.35 * \text{Cost} = 1.35 * \text{Cost}$, *Cost* = $\$670 / 1.35 = \496.30

9. D 10. C 11. C 12. D 13. A 14. A 15. B 16. C 17. C 18. B 19. A 20. C

Practice Questions – Advanced Algebra

1. If the average of three numbers is V. If one of the numbers is Z and another is Y, what is the remaining number?

- A. $ZY - V$
B. $Z/V - 3 - Y$
C. $Z/3 - V - Y$
D. $3V - Z - Y$
E. $V - Z - Y$

2. Two cyclists start biking from a trail's start 3 hours apart. The second cyclist travels at 10 miles per hour and starts 3 hours after the first cyclist who is traveling at 6 miles per hour. How much time will pass before the second cyclist catches up with the first from the time the second cyclist started biking?

- A. 2 hours B. $4 \frac{1}{2}$ hours C. $5 \frac{3}{4}$ hours D. 6 hours E. $7 \frac{1}{2}$ hours

3. Jim can fill a pool carrying buckets of water in 30 minutes. Sue can do the same job in 45 minutes. Tony can do the same job in $1 \frac{1}{2}$ hours. How quickly can all three fill the pool together?

- A. 12 minutes B. 15 minutes C. 21 minutes D. 23 minutes E. 28 minutes

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4. Mary is reviewing her algebra quiz. She has determined that one of her solutions is incorrect. Which one is it?

- A. $2x + 5(x-1) = 9, x = 2$
- B. $p - 3(p-5) = 10, p = 2.5$
- C. $4y + 3y = 28, y = 4$
- D. $5w + 6w - 3w = 64, w = 8$
- E. $t - 2t - 3t = 32, t = 8$

5. What simple interest rate will Susan need to secure to make \$2,500 in interest on a \$10,000 principal over 5 years?

- A. 4%
- B. 5%
- C. 6%
- D. 7%
- E. 8%

6. Which of the following is not a rational number?

- A. -4
- B. $\frac{1}{5}$
- C. 0.8333333...
- D. 0.45
- E. $\sqrt{2}$

7. A study reported that in a random sampling of 100 women over the age of 35 showed that 8 of the women were married 2 or more times. Based on the study results, how many women in a group of 5,000 women over the age of 35 would likely be married 2 or more times?

- A. 55
- B. 150
- C. 200
- D. 400
- E. 600

8. John is traveling to a meeting that is 28 miles away. He needs to be there in 30 minutes. How fast does he need to go to make it to the meeting on time?

- A. 25 mph
- B. 37 mph
- C. 41 mph
- D. 49 mph
- E. 56 mph

9. If Steven can mix 20 drinks in 5 minutes, Sue can mix 20 drinks in 10 minutes, and Jack can mix 20 drinks in 15 minutes, how much time will it take all 3 of them working together to mix the 20 drinks?

- A. 2 minutes and 44 seconds
- B. 2 minutes and 58 seconds
- C. 3 minutes and 10 seconds
- D. 3 minutes and 26 seconds
- E. 4 minutes and 15 seconds

10. If Sam can do a job in 4 days that Lisa can do in 6 days and Tom can do in 2 days, how long would the job take if Sam, Lisa, and Tom worked together to complete it?

- A. 0.8 days
- B. 1.09 days
- C. 1.23 days
- D. 1.65 days
- E. 1.97 days

Answer Key

- 1. D
- 2. B
- 3. B
- 4. E
- 5. B
- 6. E
- 7. D
- 8. E
- 9. A
- 10. B

Practice Questions – Averages and Roundings

1. Round 907.457 to the nearest tens place.

- A. 908.0 B. 910 C. 907.5 D. 900 E. 907.46

2. At a certain high school, the respective weights for the following subjects are: Mathematics 3, English 3, History 2, Science 2 and Art 1.

What is a student's average whose marks were the following: Geometry 89, American Literature 92, American History 94, Biology 81, and Sculpture 85?

- A. 85.7 B. 87.8 C. 88.9 D. 89.4 E. 90.2

3. Ginger over the course of an average work-week wanted to see how much she spent on lunch daily. On Monday and Thursday, she spent \$5.43 total. On Tuesday and Wednesday, she spent \$3.54 on each day. On Friday, she spent \$7.89 on lunch. What was her average daily cost?

- A. \$3.19 B. \$3.75 C. \$3.90 D. \$4.08 E. \$4.23

4. What is 1230.932567 rounded to the **nearest hundredths** place?

- A. 1200
B. 1230.9326
C. 1230.93
D. 1230
E. 1230.933

5. Subtract the following numbers rounded to the **nearest tenths** place.

$$\begin{array}{r} 134.679 \\ -45.548 \\ -67.8807 \end{array}$$

- A. 21.3 B. 21.25 C. -58.97 D. -59.0 E. 1

6. What is the absolute value of -9?

- A. -9 B. 9 C. 0 D. -1 E. 1

7. What is the median of the following list of numbers? 4, 5, 7, 9, 10, 12

- A. 6
B. 7.5
C. 7.8
D. 8
E. 9

8. What is the mathematical average of the number of weeks in a year, seasons in a year, and the number of days in January?

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A. 36 B. 33 C. 32 D. 31 E. 29

9. In a college, some courses contribute more towards an overall GPA than other courses. For example, a science class is worth 4 points; mathematics is worth 3 points; history is worth 2 points; and English is worth 3 points. The values of the grade letters are as follows, A= 4, B=3, C=2, D=1, F=0. What is the GPA of a student who made a “C” in Trigonometry, a “B” in American History, an “A” in Botany, and a “B” in Microbiology?

A. 2.59
B. 2.86
C. 3.08
D. 3.33
E. 3.67

10. Over the course of a week, Fred spent \$28.49 on lunch. What was the average cost per day?

A. \$4.07
B. \$3.57
C. \$6.51
D. \$2.93
E. \$5.41

Answer Key

1. B 2. C 3. D 4. C 5. A 6. B 7. D 8. E 9. C 10. A

Practice Questions - Arithmetic

1. Add $0.98 + 45.102 + 32.3333 + 31 + 0.00009$

A. 368.573 B. 210.536299 C. 109.41539

D. 99.9975 E. 80.8769543

2. Find $0.12 \div 1$

A. 12 B. 1.2 C. .12 D. .012 E. .0012

3. $(9 \div 3) \times (8 \div 4) =$

A. 1 B. 6 C. 72 D. 576 E. 752

4. $6 \times 0 \times 5$

A. 30 B. 11 C. 25 D. 0 E. 27

5. $7.95 \div 1.5$

A. 2.4 B. 5.3 C. 6.2 D. 7.3 E. 7.5

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6. $-32 + 7$ equals:

- A. -25 B. 25 C. -26 D. 26 E. 27

7. $-37 + -47$ equals:

- A. 64 B. -84 C. 65 D. -75 E. -66

8. 41% equals:

- A. 4.1 B. .41 C. .041 D. .0041 E. .00415

Answer Key

1. C 2. C 3. B 4. D 5. B 6. A 7. B 8. B

Practice Questions – Use of Commas - Grammar

1. For the Thanksgiving reunion, relatives were sitting in the dining room, on the porch, and in the carport.

- A. Thanksgiving, reunion
B. Were, sitting
C. Porch and
D. No error

2. Lydia seems to be a kind, considerate girl.

- A. Seems, to
B. Considerate, girl
C. Kind considerate
D. No error

3. This fishing pole Nathan, has seen better days.

- A. Pole, Nathan,
B. Has, seen
C. Nathan,
D. No error

4. My cousin has moved to 56 Central Street Narragansett, Rhode Island 02882.

- A. Has moved,
B. Central Street,
C. 56, Central
D. No error

5. The badger, a shy animal sometimes makes friends with a coyote.

- A. Sometimes, makes B. Friends, with C. A shy animal, D. No error

6. After the death of Blackbeard, the famous pirate, piracy disappeared from the coast of the American colonies.

- A. The famous pirate B. After the death, C. Coast, of D. No error

7. "Silent Night" was written by two men from the village of Oberndorf Austria.

- A. men, from B. Silent Night, C. Oberndorf, Austria D. No error

8. On November 19, 1929 Admiral Richard E. Byrd flew the *Floyd Bennett* to the base of the Queen Maud Mountains.

- A. Base, of B. The, Queen C. 1929, D. no error

9. Oh I forgot to bring the cookies.

- A. Oh, B. I, forgot C. To, bring D. No error

10. "The boy in the kayak," whispered Sue "is the new football captain."

- A. Boy, in the B. New, football C. Whispered Sue, D. No error

Answer Key

1. D 2. D 3. A 4. B 5. C 6. D 7. C 8. C 9. A 10. C

Practice Questions – Estimation and Sequencing

1. Describe the following sequence in mathematical terms. 144, 72, 36, 18, 9

- A. Descending arithmetic sequence B. Ascending arithmetic sequence
C. Descending geometric sequence D. Ascending geometric sequence
E. Miscellaneous sequence

2. Which of the following is not a whole number followed by its square?

- A. 1, 1 B. 6, 36 C. 8, 64 D. 10, 100 E. 11, 144

3. A nurse has to record her temperatures in Celsius but her thermometer reads Fahrenheit. A patient's temperature is 100.7° F. What is the temperature in °C?

- A. 32° C B. 36.5° C C. 38.2° C D. 213.3° C E. 223.7° C

4. Art realized that he had 2 more quarters than he had originally thought in his pocket. If all of the change in his pocket is quarters and it totals to \$8.75, how many quarters did he originally think were in his pocket?

- A. 27 B. 29 C. 31 D. 33 E. 35

5. There are 12 more apples than oranges in a basket of 36 apples and oranges. How many apples are in the basket?

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A. 12 B. 15 C. 24 D. 28 E. 36

Answer Key

1. C 2. E 3. C 4. D 5. C

Practice Questions – Exponents

1. 10^4 is **not** equal to which of the following?

A. 100,000 B. 0.1×10^5 C. $10 \times 10 \times 10 \times 10$ D. $10^2 \times 10^2$ E. 10,000

2. Multiply 10^4 by 10^2

A. 10^8 B. 10^2 C. 10^6 D. 10^{-2} E. 10^3

3. Divide x^5 by x^2

A. x^7 B. x^4 C. x^{10} D. x^3 E. $x^{2.5}$

4. Find 8.23×10^9

A. 0.00000000823 B. 0.000000823 C. 8.23 D. 8230000000 E. 823000000000

5. 83,000 equals:

A. 83.0×10^4 B. 8.3×10^4 C. 8.3×10^3 D. 83.0×10^5 E. 83.0×10^2

6. .00875 equals:

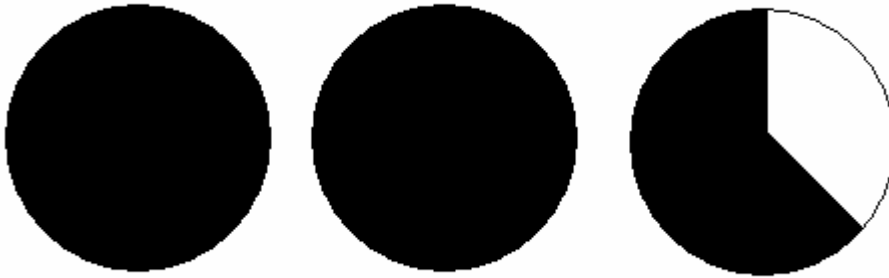
A. 8.75×10^{-2} B. 8.75×10^{-3} C. 8.75×10^{-4} D. 87.5×10^{-3} E. 875×10^{-4}

Answer Key

1. A 2. C 3. D 4. D 5. B 6. B

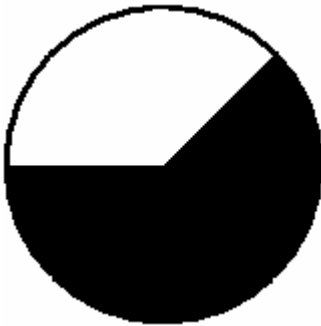
Practice Questions: Fractions and Square Roots

1. What is the improper fraction or mixed number represented by the following figure?



- A. $2\frac{1}{3}$ B. $\frac{7}{6}$ C. $2\frac{5}{8}$ D. $\frac{11}{3}$ E. $\frac{11}{9}$

2. Which of the following fractions **most correctly** depicts the shaded area of the circle below?



- A. $\frac{3}{8}$ B. $\frac{5}{8}$ C. $\frac{3}{4}$ D. $\frac{5}{11}$ E. $\frac{1}{2}$

3. Which of the following is **not** a fraction equivalent to $\frac{3}{4}$?

- A. $\frac{6}{8}$ B. $\frac{9}{12}$ C. $\frac{12}{18}$ D. $\frac{21}{28}$ E. $\frac{27}{36}$

4. Solve: $0.25 + 0.65$

- A. $\frac{1}{2}$ B. $\frac{9}{10}$ C. $\frac{4}{7}$ D. $\frac{2}{9}$ E. $\frac{5}{16}$

5. Which of the following statements is **false**?

- A. In the fraction $\frac{1}{2}$, one is the numerator.
B. When 4.89 is rounded to the ones place, the answer is 5.
C. Ten thousandths place is located 5 places to the right of the decimal
D. $\frac{7}{6}$ is described as an improper fraction.

E. $33\frac{1}{3}\%$ is equivalent to $\frac{1}{3}$

6. Find the square of $\frac{25}{9}$

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A. $5/3$ B. $3/5$ C. $7\ 58/81$ D. $15/2$ E. $650/81$

7. Sarah needs to make a cake and some cookies. The cake requires $3/8$ cup of sugar and the cookies require $3/5$ cup of sugar. Sarah has $15/16$ cups of sugar. Does she have enough sugar, or how much more does she need?

- A. She has enough sugar. B. She needs $1/8$ of a cup of sugar.
C. She needs $3/80$ of a cup of sugar. D. She needs $4/19$ of a cup of sugar.
E. She needs $1/9$ of a cup of sugar.

8. There are 8 ounces in a $1/2$ pound. How many ounces are in $7\ 3/4$ lbs?

A. 12 ounces B. 86 ounces C. 119 ounces D. 124 ounces E. 138 ounces

9. If the value of x and y in the following fraction are both **tripled**, how does the value of the fraction change?

$$\frac{XZ}{Y}$$

- A. increases by half B. decreases by half C. triples
D. doubles E. remains the same

10. Which of the following fractions is the **equivalent** of 0.5%

A. $1/20$ B. $1/200$ C. $1/2000$ D. $1/5$ E. $1/500$

11. Which of these numbers is a factor of 21

A. 2 B. 5 C. 7 D. 42 E. 44

12. If the average person drinks 8, (8oz) glasses of water per day, a person who drinks 12.8 oz of water after a morning exercise session has consumed what fraction of the daily average?

A. $1/3$ B. $1/5$ C. $1/7$ D. $1/9$ E. $1/10$

13. You need $4/5$ cups of water for a recipe. You accidentally put $1/3$ cups into the mixing bowl with the dry ingredients. How much more water in cups do you need to add?

A. $1/3$ cups B. $2/3$ cups C. $1/15$ cups D. $7/15$ cups E. $7/16$ cups

14. $3/4 - 1/2 =$

A. $1/4$ B. $1/3$ C. $1/2$ D. $2/3$ E. $2/5$

15. $7\ 1/2 - 5\ 3/8 =$

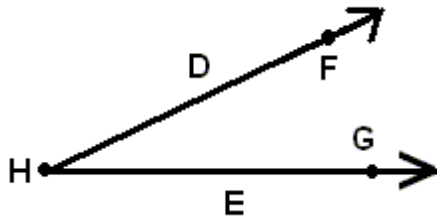
A. $1\ 1/2$ B. $1\ 2/3$ C. $2\ 1/8$ D. $3\ 1/4$ E. 3

Answer Key

1. C 2. B 3. C 4. B 5. C 6. C 7. C 8. D
9. E 10. B 11. C 12. B 13. D 14. A 15. C

Practice Questions – Geometry

1. Which of the following letters represents the vertex in the following picture?

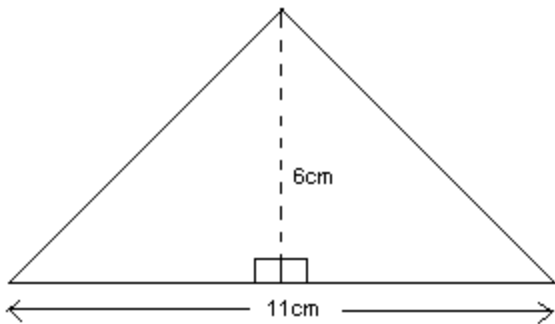


A. D and E B. E and H C. F and G D. G only E. H only

2. If a circle has the diameter of 8, what is the circumference?

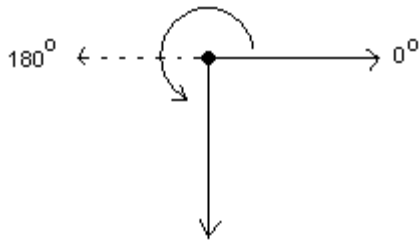
A. 6.28 B. 12.56 C. 25.13 D. 50.24 E. 100.48

3. What is the area of the triangle below?



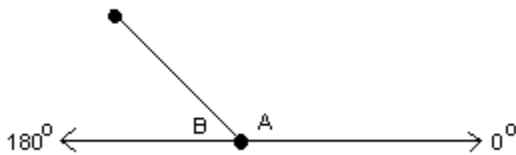
A. 22 cm² B. 33 cm² C. 44 cm² D. 50 cm² E. 66 cm²

4. What is the measure of the solid line angle depicted by the following figure?



- A. 90 degrees B. 180 degrees C. 225 degrees D. 270 degrees E. 0 degrees

5. What is the measure of angle B in the following figure if angle A measures 135°?



- A. 40° B. 45° C. 50° D. 135° E. 225°

Answer Key

1. E 2. C 3. B 4. D 5. B

Practice Questions – Basic Grammar

1. Everyone in the bank-including the manager and the tellers, ran to the door when the fire alarm rang.

- A. tellers, ran B. tellers:ran C. tellers, had run
D. tellers-ran E. tellers' ran"

2. To no ones surprise, Joe didn't have his homework ready.

- A. no ones surprise B. noones surprise C. no-ones surprise
D. no ones' surprise E. no one's surprise

3. If he would have read "The White Birds," he might have liked William Butler Yeats's poetry.

- A. would have read B. could have read C. would of read
D. could of read E. had read

4. After the hurricane, uprooted trees were laying all over the ground.

- A. were laying B. lying C. were lying D. were laid E. was laid

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5. Ralph Waldo Emerson (1803-1882), the great Transcendentalist philosopher, wrote in his essay "Self-Reliance" of the need for an individual to develop his capacities.

- A. essay "Self-Reliance" B. essay, "Self-Reliance" C. essay: Self-Reliance
D. essay, Self-Reliance E. essay; "Self-Reliance"

6. The recently built children's amusement park has been called "a boon to the community" by its supporters and "an eyesore" by its harshest critics.

- A. and "an eyesore" by its harshest B. and, "an eyesore," by its harshest
C. and, an eyesore; by its harshest D. and-an eyesore- by its' harshest
E. and-"an eyesore"- by its' harshest

7. I always have trouble remembering the meaning of these two common verbs, affect (to change" or "to influence") and effect ("to cause" or "to accomplish). "

- A. " to accomplish). " B. " to accomplish") C. "to accomplish). D. To accomplish.
E. (" to accomplish. ")

8. My class just finished reading- "The Fall of the House of Usher", a short story by Edgar Allen Poe.

- A. reading- "The Fall of the House of Usher", B. reading, The Fall of the House of Usher,
C. reading "The Fall of the House of Usher, " D. reading, The Fall of the house of Usher, "
E. reading: The Fall of the House of Usher-

9. After it was repaired it ran perfect again.

- A. ran perfect B. ran perfectly C. could run perfect D. could of run perfect
E. would run perfectly

10. "Are there two e's in beetle," asked Margo?

- A. there two e's in beetle," asked Margo? B. their two e's in beetle?" asked Margo.
C. there two e's in beetle," asked Margo? D. there two e's in beetle?" asked Margo.
E. there two e's in beetle, asked Margo?

11. The circus audience received a well-deserved round of applause for the perfectly timed acrobatic stunt.

- A. audience received a well-deserved B. audience gave a well deserved
C. audience did receive a well deserved D. audience gave a well-deserved
E. audience did get a well-deserved

12. Looking directly at me, my Mother said, "These are your options: the choice is yours."

- A. Mother said, "These are your options: the choice is
B. Mother said- these are your options, the choice is
C. Mother had said, These are your options; the choice is
D. Mother had said, "These are your options; the choice is
E. Mother said, "These are your options; the choice is

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13. *Porcupine* is from Latin *porcus*, “pig,” and *spina*, “spine.”

- A. *porcus*, “pig,” and *spina*, “spine.”
- B. *Porcus-pig and spina*, “spine.”
- C. *Porcus-pig, and Spina*, “spine.”
- D. *Porcus-Pig-,Spina-spine*.
- E. *Porcus*, “pig,” and *spina* “spine”.

14. Seeing the dolphins, some sharks, a killer whale, and a Moray eel made the visit to the marine park worthwhile.

- A. a killer whale, and a Moray eel made the visit
- B. a killer whale, and a moray eel made the visit
- C. a killer whale and a moray eel makes the visit
- D. a killer whale and a Moray eel makes the visit
- E. a killer whale and a moray eel made the visit

15. Still, the fact that a planet exists outside our solar system encourages hope that other solar systems exist, and in them, perhaps, a planet that does support life.

- A. that a planet exists outside our solar system encourages hope that other solar systems exist, and
- B. that a Planet exists out side our solar system encourages hope that other solar systems exist and
- C. could be that a planet exists outside our solar system encourages hope that other solar systems exist, and
- D. that a planet exist outside our solar systems encourage hope that other solar systems exist, and
- E. that a planet does exists out side our solar system encourages hope that other solar systems exist, and

16. Mail-order shopping can be convenient and timesaving with appropriate precautions, it is safe as well.

- A. can be convenient and timesaving
- B. can be convenient and timesaving;
- C. should be convenient and time saving;
- D. could be convenient and time saving;
- E. can be convenient and time-saving;

17. Among the many fields of science, no matter what turns you on, there are several fields of study.

- A. science, no matter what turns you on,
- B. Science, no matter what turns you on,
- C. Science, no matter which you chose,
- D. Science, no matter which of these you chose-
- E. science, no matter which you choose,

18. The fact that boxing is known to cause head injuries and brain damage should lead us to inform the public and push for a ban on boxing.

- A. should lead us to inform
- B. could lead us to inform
- C. should of led us to inform
- D. will lead us to inform
- E. should have led us to inform,

19. The first part of the test was on chemistry, the second on mathematics, and the third on english.

- A. on mathematics, and the third on english.
- B. on mathematics; and the third on English.
- C. on Mathematics; and the third on English.
- D. on mathematics, and the third on English.
- E. on mathematics: and the third on English.

20. *The Diary of Anne Frank* showed a young girl's courage during two years of hiding.

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- A. showed a young girl's courage
C. did show a young girls courage
E. showed a young girl's courage
- B. shows a young girl's courage
D. has shown a young girl's courage

21. In August my parents will be married for twenty-five years.

- A. will be married for twenty-five years.
C. will have been married for twenty-five years.
E. will have married for twenty-five years.
- B. shall have been married for twenty-five years.
D. will be married for twenty five years.

Answer Key

1. D 2. E 3. E 4. C 5. A 6. A 7. B 8. C 9. B 10. D 11. D
12. E 13. A 14. B 15. A 16. E 17. E 18. A 19. D 20. B 21. C

Practice Questions Intermediate Grammar

1. The word *boycott* derives from the name of Charles C. Boycott, an English land agent in Ireland that was ostracized for refusing to reduce rent.

- A. that was ostracized for refusing
C. which was ostracized for refusing
E. who had been ostracized for refusing
- B. who was ostracized for refusing
D. that had been ostracized for refusing

2. As a result of his method for early music education, Shinichi Suzuki has been known as one of the world's great violin teachers.

- A. has been known as one
D. is being seen as one
- B. had been known as one
E. has been one
- C. is seen as one

3. Last night the weather forecaster announced that this is the most rainy season the area has had in the past decade.

- A. this is the most rainy season the
C. this was the most rainy season the
E. this is the rainiest season the
- B. this has been the most rainy season the
D. this is noted as the most rainy season the

4. Although Mandy is younger than her sister, Mandy is the tallest of the two.

- A. is the tallest of the
D. is the most tall of the
- B. is the taller of the
E. is the more taller of the
- C. has been the taller of the

5. When Katherine Hepburn's play came to town, all the tickets had sold out far in advance.

- A. had sold out far
E. had been sold out for
- B. have sold out far
- C. were sold out far
- D. had been sold out far

6. The origins of most sports is unknown.

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- A. sports is unknown B. sports have been unknown C. sports are unknown
D. sports has been unknown E. sports are now unknown

7. Neither of the Smith brothers expect to be drafted by a major league team this year.

- A. expect to be drafted B. expects to be drafted C. has expected to be drafted
D. is expecting to be drafted E. was expecting to be drafted

8. Has any of the witnesses been sworn in yet?

- A. Has any of the B. Is any of the C. Will any of the D. Are any of the
E. Have any of the

9. The *Lusitania* sunk on May 7, 1915.

- A. sunk B. did sink C. was sunk D. did sank E. sank

10. Whos in the office now?

- A. Whos in B. Whose in C. Who is in D. Who's in E. Whose' in

Answer Key

1. B 2. C 3. E 4. B 5. D 6. C 7. B 8. E 9. E 10. D

Practice Questions Advanced Grammar – what is wrong with the sentence – Capitalization, punctuation, spelling or grammar?

1. David was known for belching; and telling inappropriate jokes in public.

- A. Capitalization B. Punctuation C. Spelling D. Grammar

2. Graduation from High School is considered by many a momentous occasion.

- A. Capitalization B. Punctuation C. Spelling D. Grammar

3. Nurses plays a vital role in the healthcare profession.

- A. Capitalization B. Punctuation C. Spelling D. Grammar

4. After having his tonsels removed, the child was listless for a few days.

- A. Capitalization B. Punctuation C. Spelling D. Grammar

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5. The park was serene at twilight.

- A. Capitalization B. Punctuation C. Spelling D. Grammar

6. Was the patient's mind lucid during the evaluation.

- A. Capitalization B. Punctuation C. Spelling D. Grammar

7. The bachelor never married. Most people thought it was because of misogyny.

- A. Capitalization B. Punctuation C. Spelling D. Grammar

8. The intricacy of the mathematical equation, drove the student crazy trying to solve it.

- A. Capitalization B. Punctuation C. Spelling D. Grammar

9. The hybrid tomatoes is immune to most common diseases.

- A. Capitalization B. Punctuation C. Spelling D. Grammar

10. The professor was humiliated when his students reported him to the Dean for verbal abuse.

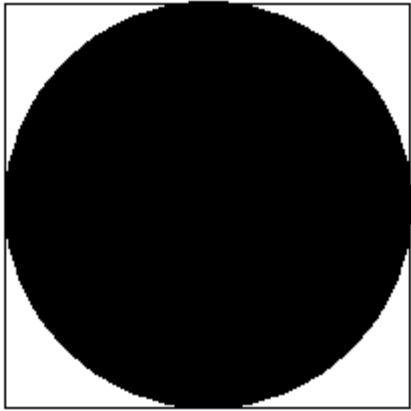
- A. Capitalization B. Punctuation C. Spelling D. Grammar

Answer Key

1. B 2. A 3. D 4. C 5. C 6. B 7. C 8. B 9. D 10. A

Practice Questions -Graphs

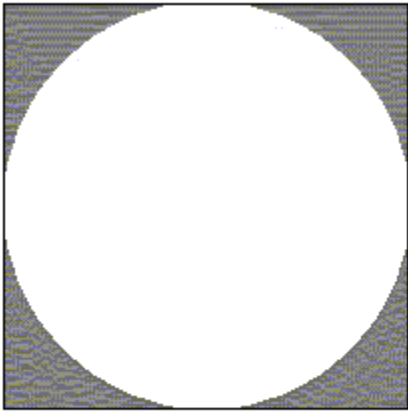
1. In the following figure, what is the area of the shaded circle inside of the square?



4

- A. 512 B. 256 C. 16 D. 50.24 E. 12.57

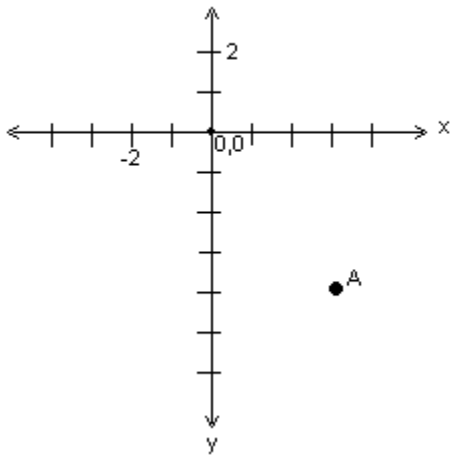
2. In the figure below, determine the area of the shaded region of the figure.



7

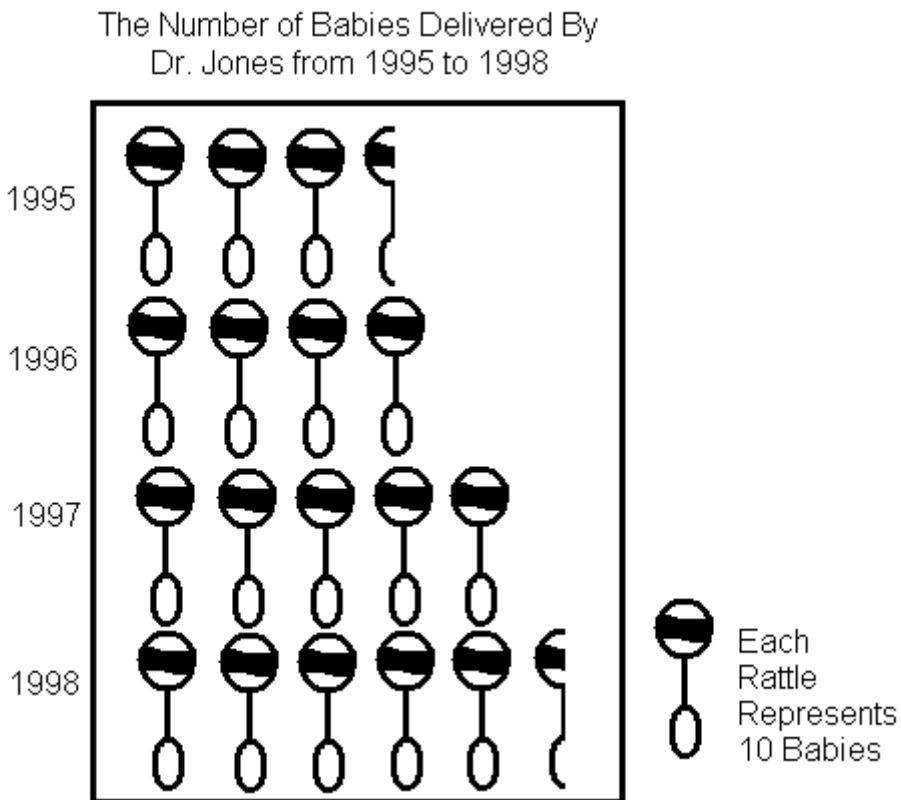
- A. 9.354 B. 10.52 C. 16.437 D. 49 E. 104.86

3. What are the coordinates of point A on the following graph?



- A. (-3, -4) B. (-4, 3) C. (3, -4) D. (-4, -3) E. (3, 4)

4. What was the average number of babies that Dr. Jones delivered each year from 1995 to 1998?



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A. 35 B. 40 C. 45 D. 50 E. 55

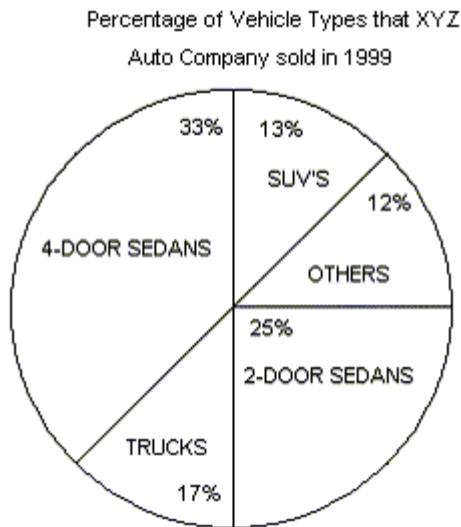
5. How many babies did Dr. Jones deliver in 1998?

A. 25 B. 35 C. 45 D. 55 E. 65

6. If Dr. Jones delivered 85 babies in 1999, how many rattles would represent this number?

A. $6\frac{1}{2}$ B. 7 C. $7\frac{1}{2}$ D. 8 E. $8\frac{1}{2}$

7. If XYZ Auto Company sold 23,000 vehicles in 1999, how many were SUV's?



A. 2,990 B. 3,030 C. 3,450 D. 4,760 E. 4,775

8. If 7,650 trucks were sold in 1999, how many total vehicles were sold in 1999 by XYZ Auto Company?

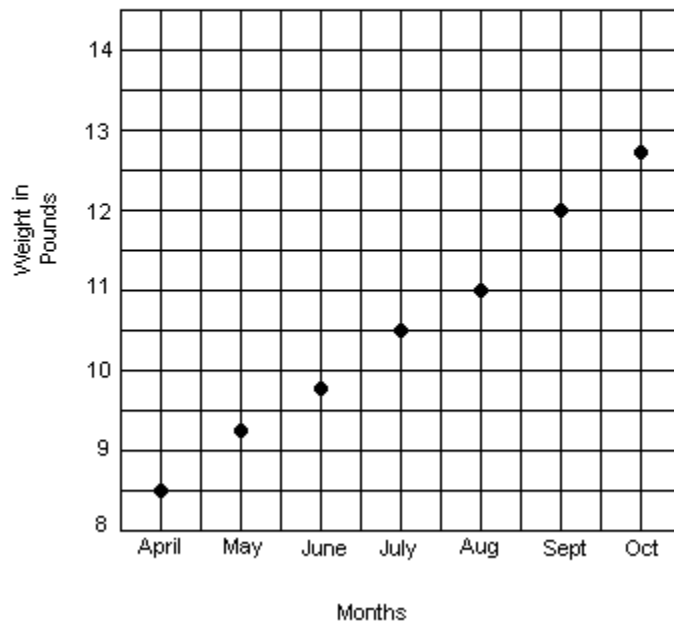
A. 35,000 B. 40,000 C. 45,000 D. 50,000 E. 55,000

9. If 3,750 2-door sedans were sold in 1999, then how many 4-door sedans were sold in 1999 by XYZ Auto Company?

A. 3,578 B. 4,950 C. 5,120 D. 5,670 E. 5,845

10. How much did the infant gain in the first month of life?

Infant Weight Gain in Pounds
Over First Six Months of Life



- A. 6 ounces B. 12 ounces C. 15 ounces D. 8 lbs 8 ounces E. 9 lbs 4 ounces

11. What was the average weight of the infant from April to October, rounded to the nearest ounce?

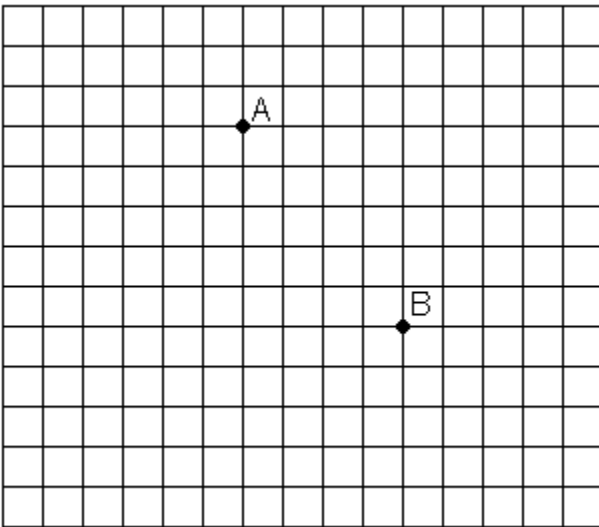
- A. 10 lbs B. 10 lbs 5 ounces C. 10 lbs 9 ounces D. 11 lbs 5 ounces
E. 11 lbs 9 ounces

12. Between which two months did the infant gain the most weight?

- A. April and May B. June and July C. July and August
D. August and September E. September and October

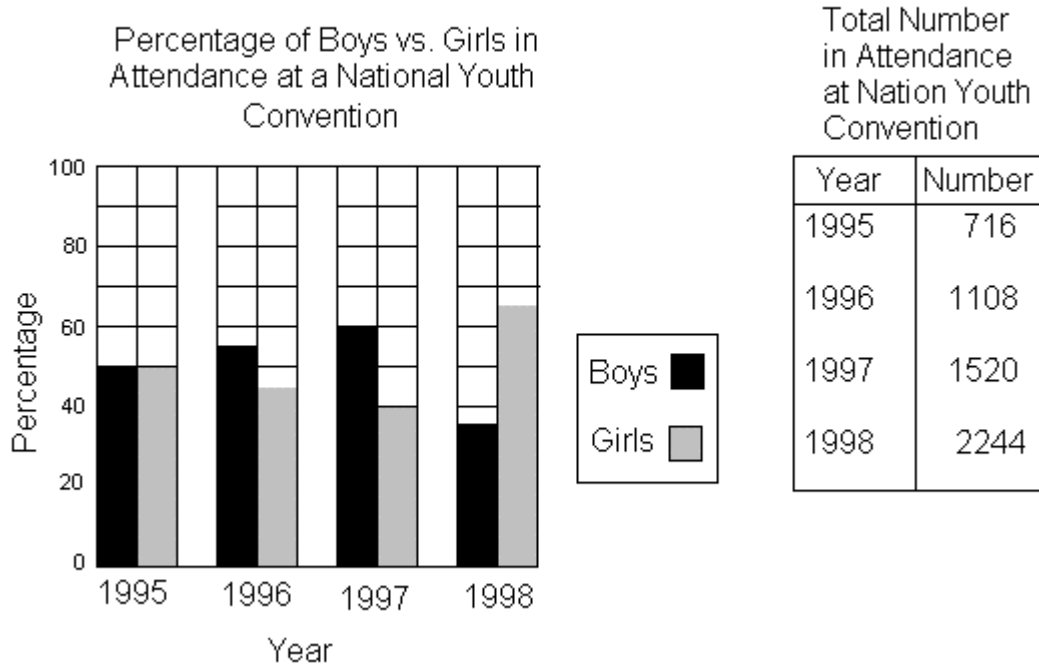
13. In the graph below, no axes or origin is shown. If point B's coordinates are (10,3), which of the following coordinates would most likely be A's?

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- A. (17, -2) B. (10, 6) C. (6, 8) D. (-10, 3) E. (-2, -17)

14. How many boys attended the 1995 convention?



- A. 358 B. 390 C. 407 D. 540 E. 716

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15. Which year did the same number of boys and girls attend the conference?

- A. 1995 B. 1996 C. 1997 D. 1998 E. None

16. Which two years did the least number of boys attend the convention?

- A. 1995 and 1996 B. 1995 and 1998 C. 1996 and 1997 D. 1996 and 1992
E. 1997 and 1998

Answer Key

1. E 2. B 3. C 4. C 5. D 6. E 7. A 8. C 9. B
10. B 11. C 12. D 13. C 14. A 15. A 16. A

Practice Questions - Measurement

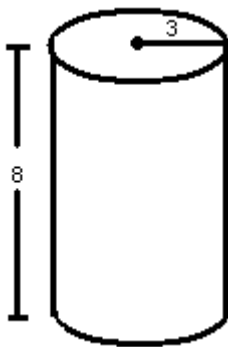
1. What will it cost to carpet a room with indoor/outdoor carpet if the room is 10 feet wide and 12 feet long? The carpet costs 12.51 per square yard.

- A. \$166.80 B. \$175.90 C. \$184.30 D. \$189.90 E. \$192.20

2. If the perimeter of a rectangular house is 44 yards, and the length is 36 feet, what is the width of the house?

- A. 10 yards B. 18 yards C. 28 feet D. 32 feet E. 36 yards

3. What is the volume of the following cylinder?



- A. 210.91
B. 226.20
C. 75.36
D. 904.32
E. 28.26

4. What is the volume of a cube whose width is 5 inches?

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- A. 15 cubic inches B. 25 cubic inches C. 64 cubic inches D. 100 cubic inches
E. 125 cubic inches

5. Sally has three pieces of material. The first piece is 1 yd. 2 ft. 6 in. long, the second piece is 2 yd. 1 ft. 5 in long, and the third piece is 4 yd. 2ft. 8in long. How much material does Sally have?

- A. 7 yd. 1 ft. 8 in. B. 8 yd. 4 ft. 4 in. C. 8 yd. 11 in. D. 9 yd. 7 in. E. 10 yd.

6. A can's diameter is 3 inches, and its height is 8 inches. What is the volume of the can?

- A. 50.30 B. 56.55 C. 75.68 D. 113.04 E. 226.08

7. If the area of a square flowerbed is 16 square feet, then how many feet is the perimeter of the flowerbed?

- A. 4 B. 12 C. 16 D. 20 E. 24

8. Of the following units which would be more likely used to measure the amount of water in a bathtub?

- A. kilograms B. liters C. milliliters D. centigrams E. volts

9. If a match box is 0.17 feet long, what is its length in inches the most closely comparable to the following?

- A. 5 1/16 inch highlighter
B. 3 1/8 inch jewelry box
C. 2 3/4 inch lipstick
D. 2 3/16 inch staple remover
E. 4 1/2 inch calculator

10. What is the cost in dollars to steam clean a room W yards wide and L yards long if the steam cleaners charge 10 cents per square foot?

- A. 0.9WL B. 0.3WL C. 0.1WL D. 9WL E. 3WL

11. One inch equals 2.54 cm, How many centimeters tall is a 76 inch man?

- A. 20 cm B. 29.92 cm C. 193.04 cm D. 300.04 cm E. 593.04 cm

12. A room measures 11 ft x 12 ft x 9 ft. What is the volume?

- A. 1188 ft³ B. 32 ft³ C. 120 ft³ D. 1300 ft³ E. 1350 ft³

13. A vitamin's expiration date has passed. It was supposed to contain 500 mg of Calcium, but it has lost 325 mg of Calcium. How many mg of Calcium are left?

- A. 135 mg B. 175 mg C. 185 mg D. 200 mg E. 220 mg

14. You have orders to give a patient 20 mg of a certain medication. The medication is stored 4 mg per 5-mL dose. How many milliliters will need to be given?

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- A. 15 mL B. 20 mL C. 25 mL D. 30 mL E. 35 mL

15. You need exactly a 1680 ft³ aquarium for your fish. At the pet store you see four choices of aquariums, but the volume is not listed. The length, width, and height are listed on the box. Which of the following aquariums would fit your needs?

- A. 12 ft x 12 ft x 12 ft B. 13 ft x 15 ft x 16 ft
C. 14 ft x 20 ft x 6 ft D. 15 ft x 16 ft x 12 ft
E. 15 ft x 12 ft x 12 ft

16. One slice of bread is 80 calorie. Approximately how many calories are in 2 ½ slices of bread?

- A. 140 calories B. 200 calories C. 220 calories D. 240 calories E. 260 calories

Answer Key

1. A 2. A 3. B 4. E 5. D 6. B 7. C 8. B
9. D 10. A 11. C 12. A 13. B 14. C 15. C 16. B

Practice Questions Nouns (a noun is a person, place or thing)

Please select the answer choice that identifies the noun in the sentence.

1. It will take all of your energy and will to be able to walk again.

- A. Take B. All C. Yours D. Energy

2. The works of many great poets have been placed on reserve.

- A. Many B. Great C. Placed D. Reserve

3. The Brooklyn Bridge was opened in 1883.

- A. Bridge B. Was C. Opened D. In

4. Sparta and Athens were enemies during the Peloponnesian War.

- A. And B. Were C. During D. War

5. Sharks and lampreys are not true fish because their skeletons are made of cartilage rather than bone.

- A. True B. Because C. There D. Bone

6. Joe, have you met your new boss?

- A. Have B. Met C. Your D. Boss

7. Sue's parents tried living in the North, but they could not adapt to the cold.

- A. North B. But C. Not D. Adapt

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8. Mastering basic mathematics is an important goal for younger students.

- A. Mastering B. Important C. Younger D. Students

9. To seize a foreign embassy and its inhabitants is flagrant disregard for diplomatic neutrality.

- A. Seize B. Its C. Flagrant D. Neutrality

10. The Trojans' rash decision, to accept the wooden horse, led to their destruction.

- A. Their B. Led C. Accept D. Destruction

Answer Key

1. D 2. D 3. A 4. D 5. D 6. D 7. A 8. D 9. D 10. D

Practice Questions – Percents (percent means “per 100”)

1. If a discount of 20% off the retail price of a desk saves Mark \$45, how much did he pay for the desk?

- A. \$145 B. \$160 C. \$180 D. \$210 E. \$215

2. A customer pays \$1,100 in state taxes on a newly purchased car. What is the value of the car if state taxes are 8.9% of the value?

- A. \$9,765.45 B. \$10,876.90 C. \$12,359.55 D. \$14,345.48 E. \$15,745.45

3. How many years does Steven need to invest his \$3,000 at 7% to earn \$210 in simple interest?

- A. 1 year B. 2 years C. 3 years D. 4 years E. 5 years

4. Sabrina's boss states that she will increase Sabrina's salary from \$12,000 to \$14,000 per year if she enrolls in business courses at a local community college. What percent increase in salary will result from Sabrina taking the business courses?

- A. 15% B. 16.7% C. 17.2% D. 85% E. 117%

5. 35% of what number is 70?

- A. 100 B. 110 C. 150 D. 175 E. 200

6. What number is 5% of 2000?

- A. 50 B. 100 C. 150 D. 200 E. 250

7. What percent of 90 is 27?

- A. 15% B. 20% C. 30% D. 33% E. 41%

8. Jim works for \$15.50 per hour for a health care facility. He is supposed to get a 75 cent per hour raise at one year of service. What will his percent increase in hourly pay be?

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A. 2.7% B. 3.3% C. 133% D. 4.8% E. 105%

9. If 45 is 120% of a number, what is 80% of the same number?

A. 30 B. 32 C. 36 D. 38 E. 41

10. How long will Lucy have to wait before her \$2,500 invested at 6% earns \$600 in simple interest?

A. 2 years B. 3 years C. 4 years D. 5 years E. 6 years

Answer Key

1. C 2. C 3. A 4. B 5. E 6. B 7. C 8. D 9. A 10. C

Practice Questions – Reading Comprehension

1. Questions 1-7.

In the sixteenth century, an age of great marine and terrestrial exploration, Ferdinand Magellan led the first expedition to sail around the world. As a young Portuguese noble, he served the king of Portugal, but he became involved in the quagmire of political intrigue at court and lost the king's favor. After he was dismissed from service to the king of Portugal, he offered to serve the future Emperor Charles V of Spain.

A papal decree of 1493 had assigned all land in the New World west of 50 degrees W longitude to Spain and all the land east of that line to Portugal. Magellan offered to prove that the East Indies fell under Spanish authority. On September 20, 1519, Magellan set sail from Spain with five ships. More than a year later, one of these ships was exploring the topography of South America in search of a water route across the continent. This ship sank, but the remaining four ships searched along the southern peninsula of South America. Finally they found the passage they sought near a latitude of 50 degrees S. Magellan named this passage the Strait of All Saints, but today we know it as the Strait of Magellan.

One ship deserted while in this passage and returned to Spain, so fewer sailors were privileged to gaze at that first panorama of the Pacific Ocean. Those who remained crossed the meridian we now call the International Date Line in the early spring of 1521 after ninety-eight days on the Pacific Ocean. During those long days at sea, many of Magellan's men died of starvation and disease.

Later Magellan became involved in an insular conflict in the Philippines and was killed in a tribal battle. Only one ship and seventeen sailors under the command of the Basque navigator Elcano survived to complete the westward journey to Spain and thus prove once and for all that the world is round, with no precipice at the edge.

The sixteenth century was an age of great ___ exploration.

- A. cosmic
- B. land
- C. mental
- D. common man
- E. none of the above

2. Magellan lost the favor of the king of Portugal when he became involved in a political ___.

- A. entanglement
- B. discussion
- C. negotiation

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- D. problems
- E. none of the above

3. The Pope divided New World lands between Spain and Portugal according to their location on one side or the other of an imaginary geographical line 50 degrees west of Greenwich that extends in a ___ direction.

- A. north and south
- B. crosswise
- C. easterly
- D. south east
- E. north and west

4. One of Magellan's ships explored the ___ of South America for a passage across the continent.

- A. coastline
- B. mountain range
- C. physical features
- D. islands
- E. none of the above

5. Four of the ships sought a passage along a southern ___.

- A. coast
- B. inland
- C. body of land with water on three sides
- D. border
- E. answer not available

6. The passage was found near 50 degrees S of ___.

- A. Greenwich
- B. The equator
- C. Spain
- D. Portugal
- E. Madrid

7. In the spring of 1521, the ships crossed the ___ now called the International Date Line.

- A. imaginary circle passing through the poles
- B. Imaginary line parallel to the equator
- C. area
- D. land mass
- E. answer not found in article

Answer Key

1. B 2. A 3. A 4. C 5. C 6. B 7. A

Practice Questions – Reading for the Main Idea (hint- it's usually in the first or last sentence)

1. Americans have always been interested in their Presidents' wives. Many First Ladies have been remembered because of the ways they have influenced their husbands. Other First Ladies have made the history books on their own.

At least two First Ladies, Bess Truman and Lady Bird Johnson, made it their business to send signals during their husbands' speeches. When Lady Bird Johnson thought her husband was talking too long, she wrote a note and sent it up to the platform. It

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read, "It's time to stop!" And he did. Once Bess Truman didn't like what her husband was saying on television, so she phoned him and said, "If you can't talk more politely than that in public, you come right home."

Abigail Fillmore and Eliza Johnson actually taught their husbands, Millard Fillmore and Andrew Johnson, the thirteenth and seventeenth Presidents. A schoolteacher, Abigail eventually married her pupil, Millard. When Eliza Johnson married Andrew, he could not read or write, so she taught him herself.

It was First Lady Helen Taft's idea to plant the famous cherry trees in Washington, D. C. Each spring these blossoming trees attract thousands of visitors to the nation's capital. Mrs. Taft also influenced the male members of her family and the White House staff in a strange way: she convinced them to shave off their beards!

Shortly after President Wilson suffered a stroke, Edith Wilson unofficially took over most of the duties of the Presidency until the end of her husband's term. Earlier, during World War I, Mrs. Wilson had had sheep brought onto the White House lawn to eat the grass. The sheep not only kept the lawn mowed but provided wool for an auction sponsored by the First Lady. Almost \$100,000 was raised for the Red Cross.

Dolly Madison saw to it that a magnificent painting of George Washington was not destroyed during the War of 1812. As the British marched toward Washington, D. C., she remained behind to rescue the painting, even after the guards had left. The painting is the only object from the original White House that was not burned.

One of the most famous First Ladies was Eleanor Roosevelt, the wife of President Franklin D. Roosevelt. She was active in political and social causes throughout her husband's tenure in office. After his death, she became famous for her humanitarian work in the United Nations. She made life better for thousands of needy people around the world.

What is the main idea of this passage?

- A. The Humanitarian work of the First Ladies is critical in American government.
- B. Dolly Madison was the most influential president's wife.
- C. Eleanor Roosevelt transformed the First Lady image.
- D. The First Ladies are important in American culture.
- E. The First Ladies are key supporters of the Presidents.

2. Of the many kinds of vegetables grown all over the world, which remains the favorite of young and old alike? Why, the potato, of course.

Perhaps you know them as "taters," "spuds," or "Kennebees," or as "chips," "Idahoese," or even "shoestrings." No matter, a potato by any other name is still a potato- the world's most widely grown vegetable. As a matter of fact, if you are an average potato eater, you will put away at least a hundred pounds of them each year.

That's only a tiny portion of the amount grown every year, however. Worldwide, the annual potato harvest is over six billion bags- each bag containing a hundred pounds of spuds, some of them as large as four pounds each. Here in the United States, farmers fill about four hundred million bags a year. That may seem like a lot of "taters," but it leaves us a distant third among world potato growers. Polish farmers dig up just over 800 million bags a year, while the Russians lead the world with nearly 1.5 billion bags.

The first potatoes were grown by the Incas of South America, more than four hundred years ago. Their descendants in Ecuador and Chile continue to grow the vegetable as high as fourteen thousand feet up in the Andes Mountains. (That's higher than any other food will grow.) Early Spanish and English explorers shipped potatoes to Europe, and they found their way to North America in the early 1600s.

People eat potatoes in many ways-baked, mashed, and roasted, to name just three. However, in the United States most potatoes are devoured in the form of French fries. One fast-food chain alone sells more than \$1 billion worth of fries each year. No wonder, then, that the company pays particular attention to the way its fries are prepared.

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Before any fry makes it to the people who eat at these popular restaurants, it must pass many separate tests. Fail any one and the spud is rejected. To start with, only russet Burbank potatoes are used. These Idaho potatoes have less water content than other kinds, which can have as much as eighty percent water. Once cut into “shoestrings” shapes, the potatoes are partly fried in a secret blend of oils, sprayed with liquid sugar to brown them, steam dried at high heat, then flash frozen for shipment to individual restaurants.

Before shipping, though, every shoestring is measured. Forty percent of a batch must be between two and three inches long. Another forty percent has to be over three inches. What about the twenty percent that are left in the batch? Well, a few short fries in a bag are okay, it seems.

So, now that you realize the enormous size and value of the potato crop, you can understand why most people agree that this part of the food industry is no “small potatoes.”

What is the main idea of this passage?

- A. Potatoes from Ireland started the Potato Revolution.
- B. The average American eats 50 lbs of potatoes a year.
- C. French fries are made from potatoes.
- D. Potatoes are a key vegetable in America.
- E. The various terms for potatoes have a long history.

3. What does the word *patent* mean to you? Does it strike you as being something rather remote from your interests? If it does, stop and think a moment about some of the commonplace things that you use every day, objects that you take for granted as part of the world around you. The telephone, radio, television, the automobile, and the thousand and one other things (even the humble safety pin) that enrich our lives today once existed only as ideas in the minds of men. If it had not been possible to patent their ideas and thus protect them against copying by others, these inventions might never have been fully developed to serve mankind.

If there were no patent protection there would be little incentive to invent and innovate, for once the details of an invention became known, hordes of imitators who did not share the inventor's risks and expenses might well flood the market with their copies of his product and reap much of the benefit of his efforts. The technological progress that has made America great would wither rapidly under conditions such as these.

The fundamental principles in the U. S. patent structure came from England. During the glorious reign of Queen Elizabeth I in England, the expanding technology was furthered by the granting of exclusive manufacturing and selling privileges to citizens who had invented new processes or tools- a step that did much to encourage creativity. Later, when critics argued that giving monopoly rights to one person infringed on the rights of others, an important principle was added to the patent structure: The Lord Chief Justice of England stated that society had everything to gain and nothing to lose by granting exclusive privileges to an inventor, because a patent for an invention was granted for something new that society never had before.

Another basic principle was brought into law because certain influential people in England had managed to obtain monopoly control over such age-old products as salt, and had begun charging as much as the traffic would bear. The public outcry became so great that the government was forced to decree that monopoly rights could be awarded only to those who created or introduced something really unique. These principles are the mainstays of our modern patent system in the United States.

In colonial times patent law was left up to the separate states. The inconsistency, confusion, and unfairness that resulted clearly indicated the need for a uniform patent law, and the men who drew up the Constitution incorporated one. George Washington signed the first patent law on April 10, 1790, and less than four months later the first patent was issued to a man named Samuel Hopkins for a chemical process, an improved method of making potash for use in soapmaking.

In 1936 the Patent Office was established as a separate bureau. From the staff of eight that it maintained during its first year of operation it has grown into an organization of over 2500 people handling more than 1600 patent applications and granting over 1000 every week.

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The Patent Office in Washington, D. C., is the world's largest library of scientific and technical data, and this treasure trove of information is open for public inspection. In addition to more than 3 million U. S. patents, it houses more than 7 million foreign patents and thousands of volumes of technical literature. Abraham Lincoln patented a device to lift steam vessels over river shoals, Mark Twain developed a self-pasting scrapbook, and millionaire Cornelius Vanderbilt invented a shoe-shine kit.

A patent may be granted for any new and useful process, machine, article of manufacture, or composition of matter (a chemical compound or combinations of chemical compounds), or any distinct and new variety; of plant, including certain mutants and hybrids.

The patent system has also helped to boost the wages of the American worker to an unprecedented level; he can produce more and earn more with the computer, adding machines, drill press or lathe. Patented inventions also help keep prices down by increasing manufacturing efficiency and by stimulating the competition that is the foundation of our free enterprise system.

The decades of history have disclosed little need for modification of the patent structure. Our patent laws, like the Constitution from which they grew, have stood the test of time well. They encouraged the creative processes, brought untold benefits to society as a whole, and enabled American technology to outstrip that of the rest of the civilized world.

What is the main idea of this passage?

- A. The patent system encourages free enterprise.
- B. The Constitution protects the patent system.
- C. The patent system in England has been influential in American patent development.
- D. Patents are important tools for inventors.
- E. Patented inventions protect the inventor, free enterprise, and the creative process.

Answer Key

- 1. D
- 2. D
- 3. E

Practice Questions – Reading Vocabulary (definitions of words)

1. After practice, the girl's softball team stated, "We're famished!"
Famished means

- A. Fatigued
- B. Hungry
- C. Excited
- D. Ready

2. The newborn baby was enamored with the rattle.
Enamored means

- A. Fascinated
- B. Happy
- C. Unsure what to do
- D. Aggravated

3. When having a problem, it is best to dissect the situation then act.
Dissect means

- A. Control
- B. Discuss
- C. Ignore
- D. Analyze

4. The bouncer's countenance discouraged brawls.
Countenance means

- A. Message
- B. Presence
- C. Expression
- D. Strength

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5. The child apprized her father's authority and behaved herself in church.

Apprized means

- A. Appreciated B. Compromised C. Defied D. Noted

6. The aural component of balance is critical for postural control during ambulation.

Aural means related to the

- A. Eyes B. Ears C. Nose D. Hands

7. The wound exhibited signs of copious drainage requiring medical intervention.

Copious means

- A. Minimal B. Clear C. Maximal D. Foul

8. The scientist was able to evoke powerful emotions from her audience.

Evoke means

- A. Sell B. Calm C. Call forth D. Exaggerate

9. The official exhibited a heedless attitude when dealing with the dignitaries.

Heedless mean

- A. Thoughtless B. Pleasant C. Friendly D. Bitter

10. The general tried to instill in his troops the hope of victory.

Instill means

- A. Infuse B. Delay C. Inscribe D. Indict

Answer Key

1. B 2. A 3. D 4. C 5. A 6. B 7. C 8. C 9. A 10. A

Practice Questions – Reading Vocabulary (word definitions)

1. The prince abdicated the crown and returned to his castle.

Abdicated means

- A. Gave up B. Sold C. Reinvested into D. Auctioned

2. The convicted criminal absconded prior to the sentencing phase of the trial. **Absconded** means

- A. Touched the jury B. Reported immediately C. Left after discussion D. Departed suddenly

3. The aural component of balance is critical for postural control during ambulation. **Aural** means related to the

- A. Eye B. Ear C. Nose D. Mouth

4. The old man was benevolent with his fortune. **Benevolent** means

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A. Secretive B. Stingy C. Kind D. Careful

5. The extra dirt was a key buttress to the foundation. **Buttress** means

A. Limiting factor B. Support C. Overwhelming condition D. Obstacle

Answer Key

1. A 2. D 3. B 4. C 5. B

Practice Questions – Science 1

1. When the chromosomes line up in mitosis this is known as which phase?

A. Telophase B. Anaphase C. Metaphase D. Prophase

2. Which cellular organelle contains enzymes that are considered digestive?

A. Golgi Apparatus B. Lysosomes C. Nucleus D. Ribosomes

3. Organs repair themselves through a process of?

A. Meiosis B. Mitosis C. Cellular differentiation D. Transformation

4. Which of the following is considered a model for enzyme action?

A. Lock and Key model B. Enzyme interaction model C. Transformation model D. Transcription model

5. Which of the following statements about enzymes is not true?

A. Enzymes are catalysts. B. Almost all enzymes are proteins. C. Enzymes operate most efficiently at optimum pH.
D. Enzymes are destroyed during chemical reactions.

6. Which of the following statements about prostaglandins is not true?

A. Prostaglandins promote inflammation. B. Prostaglandins can only constrict blood vessels.
C. Prostaglandins are made in the renal medulla. D. Prostaglandins can lead to pain and fever.

7. Cholesterol that is known as (LDL) stands for:

A. Low-density lipoproteins B. Low-density lysosomes C. Level-density lipoproteins D. Level-density lysosomes

8. Hardening of the arteries is known as:

A. Atherosclerosis B. Venous narrowing C. Micro-circulation D. Hypertension

9. The top number on a blood pressure reading indicates:

A. Diastolic pressure B. Transient pressure C. Optimum pressure D. Systolic pressure

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10. Litmus paper that is blue will turn/stay _____ in the presence of a strong base.
- A. Orange B. Red C. Blue D. Green
11. Breathing properly requires the presence of what compound that affects surface tension of alveoli in the lungs?
- A. Potassium B. Plasma C. Surfactant D. Sodium Chloride
12. Which of the following is not considered a function of the kidneys?
- A. Secretion B. Reabsorption C. Transport D. Filtration
13. The functional unit of the kidney is known as?
- A. Medulla B. Glomerulus C. Pyramid D. Nephron
14. Which of the following formulas indicate the ideal gas law?
- A. $PV = knT$ or $PV = RnT$
B. $V = kT$
C. $PV = k$
D. $KTV = PR$
15. Which of the following is not considered a characteristic or property of a gas?
- A. Volume B. Mass C. Pressure D. Particles
16. Which of the following is described in the definition: An object immersed in a fluid is buoyed up by a force equal to the weight of the fluid displaced by the object?
- A. Archimedes' principle B. Charles' law C. Boyle's law D. Anderson's principle
17. Liquids that evaporate quickly are known as _____ liquids.
- A. Viscous B. Volatile C. Evaporative D. Transient
18. High frequency sound waves are known as:
- A. Fundamental waves B. Overtones C. Consonance waves D. Dissonance waves
19. The first American to win a Nobel Prize was _____ for measuring the speed of light.
- A. Albert Einstein B. Albert Michelson C. Grimaldi D. Thomas Young
20. What anatomical structure connects the stomach and the mouth?
- A. Trachea B. Spinal column C. Hepatic duct D. Esophagus

Answer Key

1. C 2. B 3. B 4. A 5. D 6. B 7. A 8. A 9. D 10. C
11. C 12. C 13. D 14. A 15. D 16. A 17. B 18. B 19. B 20. D

Practice Questions – Science 2

- The movement of food through the intestines is known as:
A. Peristalsis B. Ileum translation C. Microvilli propulsion D. Flexure propulsion
- The enzyme *maltase* does the following:
A. Breaks down lactose to glucose B. Turns glucose into maltose C. Breaks down maltose to glucose
D. Turns glucose into lactose
- High levels of bilirubin in the blood stream can result in:
A. Uric acid overexposure B. Jaundice C. Bile salt production D. Hepatic mutation
- The symbol B on the periodic table stands for:
A. Beryllium B. Boron C. Barium D. Berkelium
- The symbol Mn on the periodic table stands for:
A. Magnesium B. Molybdenum C. Manganese D. Margon
- The symbol Ca on the periodic table stands for:
A. Calcium B. Carbon C. Cobalt D. Chlorine
- The symbol Br on the periodic table stands for:
A. Beryllium B. Boron C. Barium D. Bromine
- Vinegar is also known as:
A. Acetic acid B. Acetone acid C. Sulfuric acid D. Ascorbic acid
- A Lewis acid is a/an ____ pair acceptor.
A. Neutron B. Proton C. Electron D. Ion
- ____ reactions produce heat.
A. Endothermic B. Exothermic C. Hydrogen D. Buffered
- Which of the following match the definition: The pressure (P) is inversely proportional to the volume (V) of a gas.
A. Archimedes' principle B. Charles' law C. Boyle's law D. Anderson's principle
- The combination of sodium and chlorine to form NaCL is considered a/an ____ bond.
A. Ionic B. Covalent C. Hydrogen D. Metallic

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13. Outer shell electrons are known as _____ electrons.

- A. Hybrid B. Valence C. Vector D. Transitional

14. Forces can be indicated on graph paper by the use of _____.

- A. Empirical rules B. Interaction coefficients C. Variables D. Vectors

15. $P_1V_1 = P_2V_2$ represents:

- A. Archimedes' principle B. Charles' law C. Boyle's law D. Anderson's principle

16. Which of the following is not considered a primary color of light?

- A. Green B. Blue C. Red D. Yellow

17. The unit of charge is called the _____.

- A. Newton B. Coulomb C. Joule D. Watt

18. A/An _____ is a device specifically designed to measure current.

- A. Ammeter B. Cyclotron C. Resistor D. Capacitor

19. The two bones found in the area **between the knee and ankle** in humans are known as:

- A. Femur and Tibia B. Fibula and Tibia C. Ulna and Tibia D. Radius and Tibia

20. _____ is the current flow of one coulomb per second.

- A. Ampere B. Joule C. Watt D. Kilowatt

Answer Key

1. A 2. C 3. B 4. B 5. C 6. A 7. D 8. A 9. C
10. B 11. C 12. A 13. B 14. D 15. C 16. D 17. B 18. A 19. B 20. A

Practice Questions – Science 3

1. Which of the following **is considered** a component of lipids?

- A. Plasma cells B. Fatty acids C. Nucleic acids D. Zinc

2. Down's syndrome affects chromosome _____.

- A. 13 B. 15 C. 21 D. 23

3. Blood enters the lungs from which chamber of the heart?

- A. Right atrium B. Left atrium C. Right ventricle D. Left ventricle

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4. Excessive consumption of alcohol is most likely to damage which organ of the body over a long period of time?
A. Kidney B. Liver C. Pancreas D. Gallbladder
5. Which of the following is not considered a type of radiation ray?
A. Gamma B. Beta C. Alpha D. Infrared
6. A molecule of hemoglobin can hold how many molecules of oxygen in the blood for transport?
A. 2 B. 4 C. 6 D. 8
7. Which of the following best describes the biomechanics of breathing?
A. Pump handle motion B. Lever action C. Inspiration D. Expiration
8. Animals that eat meat almost exclusively are known as:
A. Herbivores B. Carnivores C. Arthropods D. Prolific organisms
9. The physical expressions of a gene are known as an organism's:
A. Transcription B. Genotype C. Phenotype D. Translation
10. A ball is traveling at a constant velocity of 50 m/s and has been traveling for over 2 minutes. What is the ball's acceleration?
A. 0 B. 25 m/s C. 25 m/s D. 50 m/s²
11. Neurons connect together at a _____.
A. Synergy B. Terminal site C. Docking station D. Synapse
12. Which of the following is another word for the kneecap in the human body?
A. Pisiform B. Meniscus C. Popliteal bursa D. Patella
13. Which of the following describes the shoulder joint
A. Ball and socket joint B. Saddle joint C. Hinge joint D. Pivot joint
14. The organ of Corti is found in what area of the body?
A. Mouth B. Ear C. Nose D. Lungs
15. The condition of rickets is associated with a deficiency in which vitamin?
A. A B. C C. D D. Z
16. A steroid is considered a _____.

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A. Lipid B. Protein C. Enzyme D. Weak acid

17. The X cranial nerve is the ____ nerve.

A. Abducens B. Hypoglossal C. Facial D. Vagus

18. Which of the following pH ranges is a strong base?

A. 1.3-2.0 B. 4.5-5.2 C. 7.1-9.0 D. 11.2-12.0

19. Which chamber of the heart pumps blood to the systemic circulation?

A. Left Atrium B. Right Atrium C. Left Ventricle D. Right Ventricle

20. Which of the following formulas indicates Newton's second law of motion?

A. $F = ma$ B. $F = mva$ C. $v = d/t$ D. $p = mv$

Answer Key

1. B 2. C 3. C 4. B 5. D 6. B 7. A 8. B 9. C 10. A 11. D
12. D 13. A 14. B 15. C 16. A 17. D 18. D 19. C 20. A

Practice Questions – Advanced Reading Comprehension

1. In 1892 the Sierra Club was formed. In 1908 an area of coastal redwood trees north of San Francisco was established as Muir Woods National Monument. In the Sierra Nevada mountains, a walking trail from Yosemite Valley to Mount Whitney was dedicated in 1938. It is called John Muir Trail.

John Muir was born in 1838 in Scotland. His family name means “moor,” which is a meadow full of flowers and animals. John loved nature from the time he was small. He also liked to climb rocky cliffs and walls.

When John was eleven, his family moved to the United States and settled in Wisconsin. John was good with tools and soon became an inventor. He first invented a model of a sawmill. Later he invented an alarm clock that would cause the sleeping person to be tipped out of bed when the timer sounded.

Muir left home at an early age. He took a thousand-mile walk south to the Gulf of Mexico in 1867 and 1868. Then he sailed for San Francisco. The city was too noisy and crowded for Muir, so he headed inland for the Sierra Nevadas.

When Muir discovered the Yosemite Valley in the Sierra Nevadas, it was as if he had come home. He loved the mountains, the wildlife, and the trees. He climbed the mountains and even climbed trees during thunderstorms in order to get closer to the wind. He put forth the theory in the late 1860's that the Yosemite Valley had been formed through the action of glaciers. People ridiculed him. Not until 1930 was Muir's theory proven correct.

Muir began to write articles about the Yosemite Valley to tell readers about its beauty. His writing also warned people that Yosemite was in danger from timber mining and sheep ranching interests. In 1901 Theodore Roosevelt became president of the United States. He was interested in conservation. Muir took the president through Yosemite, and Roosevelt helped get legislation

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passed to create Yosemite National Park in 1906.

Although Muir won many conservation battles, he lost a major one. He fought to save the Hetch Valley, which people wanted to dam in order to provide water for San Francisco. In the late 1913 a bill was signed to dam the valley. Muir died in 1914. Some people say losing the fight to protect the valley killed Muir.

What happened first?

- A. The Muir family moved to the United States.
- B. Muir Woods was created.
- C. John Muir learned to climb rocky cliffs.
- D. John Muir walked to the Gulf of Mexico
- E. Muir visited along the east coast.

2. When did Muir invent a unique form of alarm clock?

- A. while the family still lived in Scotland
- B. after he sailed to San Francisco
- C. after he traveled in Yosemite
- D. while the Muir family lived in Wisconsin
- E. after he took the long walk

3. What did John Muir do soon after he arrived in San Francisco?

- A. He ran outside during an earthquake.
- B. He put forth a theory about how Yosemite was formed.
- C. He headed inland for the Sierra Nevadas.
- D. He began to write articles about the Sierra Nevadas.
- E. He wrote short stories for the local newspaper.

4. When did John Muir meet Theodore Roosevelt?

- A. between 1901 and 1906
- B. between 1838 and 1868
- C. between 1906 and 1914
- D. between 1868 and 1901
- E. between 1906-1907

5. What happened last?

- A. John Muir died.
- B. John Muir Trail was dedicated.
- C. Muir's glacial theory was proven.
- D. The Sierra Club was formed.
- E. John's family visited him.

Answer Key

1. C 2. D 3. C 4. A 5. B

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