

ACCUPLACER PREP

Elementary Algebra

SECTION 1

- *Comparing Fractions*
- *Circles*
- *Order of Operations*
- *Linear Equations—1 Variable*
- *Substituting Values into Algebraic Expressions*

General Information

- About 12 questions
- Calculator for some problems
→ will pop up on screen when allowed
- Untimed

Comparing Fractions

Comparing Fractions

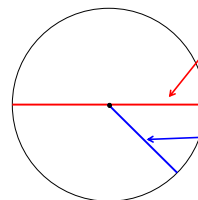
in order to compare fractions they **MUST** **HAVE** the **SAME** DENOMINATOR—if they don't, you need to rewrite the fractions so they do have the same DENOMINATOR

Replace the blank with a > or < symbol.

	$\frac{4}{5}$	$\frac{7}{8}$
Now compare the Numerators	$\frac{32}{40}$	$\frac{35}{40}$
	$\frac{32}{40} < \frac{35}{40}$	

Circles

Circles



DIAMETER—goes all the way across the circle, through the center

RADIUS—goes from center to the edge of the circle; *the radius is half the length of the diameter*

Circles



Circumference (distance around a circle)

$$C = \pi \cdot d \text{ or } C = 2 \cdot \pi \cdot r$$

Area (amount of space inside the circle)

$$A = \pi \cdot r^2$$

$$\pi = 3.14$$

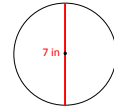
Examples

Find the circumference and area.

$$C = \pi \cdot d$$

$$C = 3.14 \cdot 7$$

$$C = 21.98 \rightarrow 21.98 \text{ in}$$



$$A = \pi \cdot r^2$$

$$A = 3.14 \cdot (3.5)^2$$

$$A = 38.465 \rightarrow 38.465 \text{ in}^2$$

Order of Operations

The Order of Operations

- 1 Perform all calculations with parentheses first
- 2 Simplify all exponents
- 3 Perform all multiplication and division—from left to right
- 4 Perform all addition and subtraction—from left to right

A phrase to help you remember
THE ORDER OF OPERATIONS

Please Excuse My Dear Aunt Sally

Parentheses

Exponents

Multiplication

Division

Addition

Subtraction

At the same time,
Left to Right

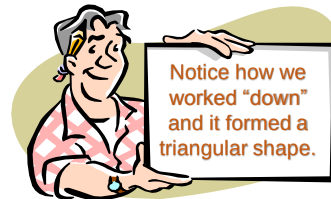
At the same time,
Left to Right

Example

$8 + \underline{5 \cdot 3}$ Do Multiplication **BEFORE** Addition

$8 + 15$ Replace the underlined part with the new value

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Example

$$5 + (6 - 2) \cdot 4 - 2$$

Do Parentheses **FIRST**

$$5 + 4 \cdot 4 - 2$$

Now **Multiplication**

$$5 + 16 - 2$$

Add and **Subtract** left to right

$$21 - 2$$

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Substituting Values into Algebraic Expressions

Evaluate.

Start by substituting the value for the variable.

$$w^3 + 5w^2 - 6w + 7 \quad \text{for } w = -2$$

$$(-2)^3 + 5(-2)^2 - 6(-2) + 7$$

Simplify.

$$-8 + 5 \cdot 4 - 6(-2) + 7$$

$$-8 + 20 + 12 + 7$$

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Evaluate.

If $x = 3$, what is the value of

$$\frac{x^2 - 4}{x + 1} \rightarrow \frac{3^2 - 4}{3 + 1}$$



$$\frac{9 - 4}{3 + 1} = \frac{5}{4}$$

Doctors use the term *maximum heart rate (MHR)* when referring to the quantity found by starting with 220 beats per minute and subtracting 1 beat per minute for each year of a person's age. Doctors recommend exercising 3 or 4 times each week for at least 20 minutes with your heart rate increased from its *resting heart rate (RHR)* to its *training heart rate (THR)*, where

$$THR = RHR + .65(MHR - RHR)$$

Which of the following is closest to the *THR* of a 43-year-old person whose *RHR* is 54 beats per minute?

A. 197

B. 169

C. 162

D. 134

E. 80

$$THR = 54 + .65(220 - 54)$$

$$THR = 54 + .65(166)$$

$$THR = 54 + 107.9$$

$$THR = 161.9$$

$$220 - 43 = 177$$

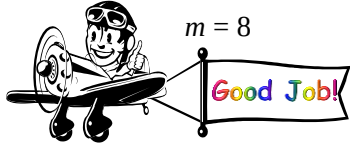
Linear Equations: 1 Variable

Solve.

$$\begin{array}{r} 12m - 11 = 85 \\ + 11 \quad + 11 \\ \hline \end{array}$$

$$\begin{array}{r} 12m = 96 \\ \div 12 \quad \div 12 \\ \hline \end{array}$$

$$m = 8$$



Solve.

$$4b + 3(2b - 1) = 2b + 13$$

$$4b + 6b - 3 = 2b + 13$$

$$\begin{array}{r} 10b - 3 = 2b + 13 \\ - 2b \quad - 2b \\ \hline \end{array}$$

$$\begin{array}{r} 8b - 3 = 13 \\ + 3 \quad + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 8b = 16 \\ \div 8 \quad \div 8 \\ \hline \end{array}$$

$$b = 2$$

Creating Algebraic Equations for Practical Problems

Translate and Solve.

The sum of 38 and twice a number is 124.

Hint:
Find the word
"is"—that
is your =

Let n = a number

$$\begin{array}{r} 38 + 2n = 124 \\ - 38 \quad - 38 \\ \hline \end{array}$$

$$\begin{array}{r} 2n = 86 \\ \div 2 \quad \div 2 \\ \hline \end{array}$$

$$n = 43$$

To the left &
right of the "is"
will be what you
need to write the
equation

Translate and Solve.

Five times a number is eighteen more than twice the number. Find the number.

Let n = a number

We need to get all
our n 's on the
same side of the =

$$\begin{array}{r} 5n = 2n + 18 \\ - 2n \quad - 2n \\ \hline 3n = 18 \\ \div 3 \quad \div 3 \\ \hline \end{array}$$

$$n = 6$$

Example

The temperature now is 8° lower than it was yesterday at this time. The temperature now is -16° . What was the temperature yesterday at this time?

Define what you are
looking for.

Let x = temp yesterday

Write an equation.

temp now is 8 lower than yest

$$\begin{array}{r} -16 = x - 8 \\ + 8 \quad + 8 \\ \hline -8 \end{array}$$

The temperature yesterday at
this time was -8° .

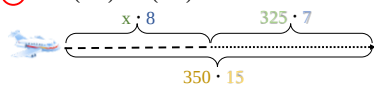
An airplane flew for 8 hours at an airspeed of x miles per hour (mph), and for 7 more hours at 325 mph. If the average airspeed for the entire flight was 350 mph, which of the following equations could be used to find x ?

- A. $x + 325 = 2(350)$
 B. $x + 7(325) = 15(350)$
 C. $8x - 7(325) = 350$
 D. $8x + 7(325) = 2(350)$
 E. $8x + 7(325) = 15(350)$

What is the total time?

Avg. Total Speed

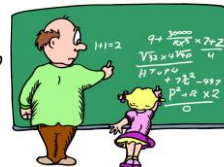
Remember:
 Distance = Rate $\times$ Time



<http://www.wt.org/compress/convert/offset/numerical.pdf>

RESOURCES:

Go to your nearest Academic Services Lab and you can get a packet of practice problems. You can also work with an instructor!



ONLINE RESOURCES:

<http://www.purplemath.com/>

"Accuplacer Math" can be found on the right side of the screen

<http://accuplacerpractice.collegeboard.org/>

need to create an account but appears to be free

