

+57 possible

Name Key

Test #1

Directions: Please show all your work since partial credit is given. Answers without the necessary work will receive no credit. And remember, have fun!

1. Simplify the following expressions.

[+2] a) $\frac{4^2 - (-6 + 2)}{-5 - (-4)}$ -20

$$\frac{16 - (-4)}{-5 + 4} = \frac{20}{-1}$$

[+2] b) $15p^2 - 7p^2 + 8p^2$ $16p^2$

$$(15 - 7 + 8)p^2$$

[+2] c) $\underline{5x - 11} + \underline{6x + 4}$ $11x - 7$

$$(5 + 6)x - 11 + 4$$
$$11x - 7$$

[+2] d) $5(2y - 1) - (y - 12) + 2(3y - 5)$ $15y - 3$

Distribution Property

$$10y - 5 - y + 12 + 6y - 10$$
$$15y - 3$$

2. Identify each of the following as an example of the Commutative, Associative, Inverse, Identity, or Distributive property.

+1 a) $3x + 0 = 3x$ Identity
0 is the Additive Identity

+1 b) $-5 + (3 + 2) = (-5 + 3) + 2$ Associative

+1 c) $-\frac{2}{3} \left(-\frac{3}{2}\right) = 1$ Inverse

+1 d) $7 + (1 + 4) = (7 + 1) + 4$ Associative

These two numbers are multiplicative inverses of each other.

+12

[+5] 3. The owner of Terry's Teahouse found that on one day, the number of orders for tea was one third the number of orders for coffee. The total number of orders for the two drinks was 76.

a) Assign a variable to represent an unknown value.

+1 $X = \# \text{ of orders of coffee}$
 $\frac{1}{3}X = \# \text{ of orders of tea}$

b) Write an equation using the variable expressions from part a).

(# of coffee) + (# of teas) = (Total)
 +1 $X + \frac{1}{3}X = 76$

c) Solve the equation. $X = 57$

+2 $\frac{3}{4} \cdot \frac{4}{3} X = 76 \cdot \frac{3}{4}$

$X = 57$

d) How many of each drink were ordered?

+1 Tea: 19 orders (# of teas) = $\frac{1}{3}(57) = 19$

Coffee: 57 orders

4. Write an expression for the following statements and simplify

[+2] a) The quotient of -6 and the sum of 2 and -8. $\frac{-6}{2+(-8)} = 1$

$$\frac{-6}{2+(-8)} = \frac{-6}{-6} = 1$$

[+2] b) Seven times a number, subtracted from the product of -2 and three times a number. -13n

$-2(3n) - 7n$

$-6n - 7n$

$-13n$

+9

5. Solve the following equations.

[+2] a) $3x = -18$ $x = -6$

$$\frac{3x}{3} = \frac{-18}{3}$$

$$x = -6$$

[+4] b) $5y + 9 = 7y + 21$ $y = -6$

$$\begin{array}{r} -5y \\ -5y \end{array}$$

$$9 = 2y + 21$$

$$\begin{array}{r} -21 \\ -21 \end{array}$$

$$\frac{-12}{2} = \frac{2y}{2} \rightarrow -6 = y$$

[+4] c) $-3x + 6(x+4) = 3(x+8)$ all reals

$$-3x + 6x + 24 = 3x + 24$$

$$3x + 24 = 3x + 24$$

$$0 = 0$$

d) $\frac{2x+3}{5} = \frac{x-4}{2}$ $x = 26$

[+4] Cross Multiply

$$2(2x+3) = 5(x-4)$$

$$4x + 6 = 5x - 20$$

$$\begin{array}{r} -4x \\ -4x \end{array}$$

$$\begin{array}{r} 6 = x - 20 \\ +20 \quad +20 \end{array}$$

$$26 = x$$

[+4] e) $\frac{-5}{m} = \frac{2}{m-2}$ $m = \frac{10}{7}$

Cross Multiply

$$-5 \cdot (m-2) = 2m$$

$$-5m + 10 = 2m$$

$$\begin{array}{r} +5m \\ +5m \end{array}$$

$$\frac{10}{7} = \frac{7m}{7}$$

$$\frac{10}{7} = m$$

[+2] f) $3x + 4y = 24$, for $y = \frac{-3x+24}{4} = \frac{-3}{4}x + 6$

$$\begin{array}{r} -3x \\ -3x \end{array}$$

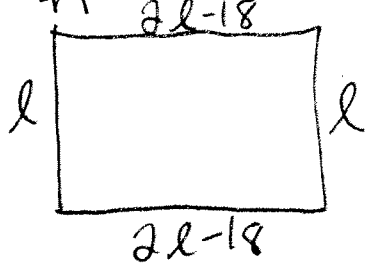
$$\frac{4y}{4} = \frac{-3x+24}{4}$$

$$y = \frac{-3x+24}{4}$$

+20

[+4] 6. The perimeter of a rectangle is 36 yards. The width is 18 yd less than twice the length.

+1 a) Draw a picture, and help declare your variable by completely labeling your picture.



$$l = \text{length (yds)}$$

$$w = 2l - 18$$

+2 b) Write and solve an equation.

$$\text{Perimeter} = 2 \cdot (\text{length}) + 2 \cdot (\text{width})$$

This is our equation!

$$\rightarrow 36 = 2l + 2 \cdot (2l - 18)$$

$$36 = 2l + 4l - 36$$

$$36 = 6l - 36$$

$$+36 \qquad +36$$

$$72 = 6l$$

$$\frac{72}{6} = l$$

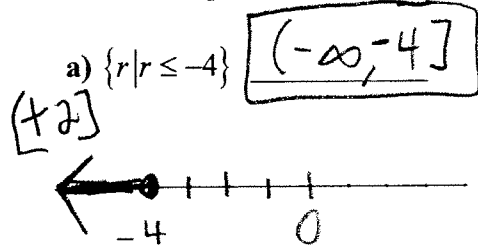
$$\boxed{12 = l}$$

+1 c) What are the dimensions of the rectangle?

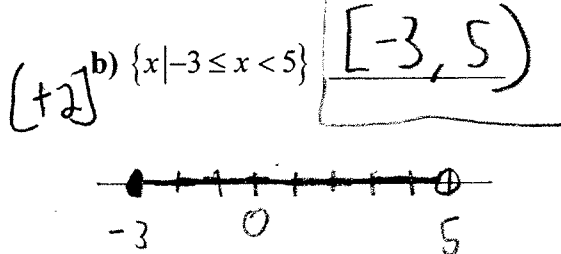
Length: $\boxed{12 \text{ yds}}$ Width: $\boxed{6 \text{ yds}}$

$$\text{width} = 2(12) - 18 = 6$$

7. Graph the following sets and write using interval notation.



$\boxed{(-\infty, -4]}$



- [+4] 8. Two friends started driving at the same time from towns 450 miles apart and met in 4 hours. The first friend averaged 19 mph more than the second friend.

a) Assign a variable to an unknown quantity. You can use the following table.

+1

	Rate mph	Time h	Distance mi
Car 1	$x+19$	4	$4(x+19)$
Car 2	x	4	$4x$
Total	////	////	450

b) Write and solve an equation.

This is our equation

+2 $4(x+19) + 4x = 450$

$4x + 76 + 4x = 450$

$8x + 76 = 450$
 $-76 \quad -76$

$8x = 374$

$8x = 374$
 $\frac{8x}{8} = \frac{374}{8}$

$x = 46.75$

c) How fast was each car traveling?

+1

Car 1: 65.75 mph

Car 2: 46.75 mph

(Car 1 rate) = $46.75 + 19$
 $= 65.75$

- [+4] 9. One of the tallest candles ever constructed was exhibited at the 1897 Stockholm Exhibition. The candle cast a shadow 5 feet long at the same time a vertical pole 32 feet high cast a shadow 2 feet long.

a) Declare a variable.

+1

$h = \text{height of the candle (ft)}$

b) Write and solve an equation describing the proportionality.

$h = 80$

+2
 height
 shadow

$\frac{h}{5} = \frac{32}{2}$

$2h = 160$

$\frac{2h}{2} = \frac{160}{2}$
 $h = 80$

c) How tall was the candle?

+1

80 feet

+8

