8th Grade Math
Mr. Willimann
U2 Test Review #2 Hwk

Name: _Key_

Date: _____ Class: _____

Write and solve an equation for the following situations. SHOW WORK

1) A1 Plumbing Service charges $35 per hour plus a $25 travel charge for a service call. Good Guys Plumbing Repair charges $40 per hour for a service call with no travel charge. How long must a service call be for the two companies to charge the same amount?

Define Variable: _h_ = # of hours

It would take 5 hours.

Equation

$$35h + 25 = 40h$$
$$-35h \qquad -35h$$
$$\overline{}$$
$$\frac{25 = 5h}{5 \qquad 5}$$
$$\boxed{5 = h}$$

2) The Lone Star Shipping Company charges $14 plus $2 a pound to ship an overnight package. Discount Shipping Company charges $20 plus $1.50 a pound to ship an overnight package. For what weight is the charge the same for the two companies?

Define Variable: _p_ = # of pounds

At 12 pounds, the cost would be the same for both companies.

Equation

$$14 + 2p = 20 + 1.50p$$
$$-1.50p \qquad -1.50p$$
$$\overline{}$$
$$14 + 0.5p = 20$$
$$-14 \qquad\qquad -14$$
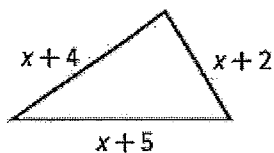$$\frac{0.5p = 6}{0.5 \qquad 6.5} \quad \boxed{p = 12 \text{ pounds}}$$

3) Eighteen less than three times a number is twice the number. Define a variable, write an equation, and solve to find the number.
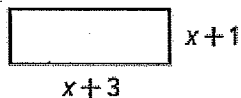
Define Variable: _n_ = a number

Equation

$$3n - 18 = 2n$$
$$-3n \qquad -3n$$
$$\overline{}$$
$$\frac{-18 = -1n}{-1 \qquad -1}$$
$$\boxed{18 = n}$$

4) The polygons below have the same perimeter. Write and solve an equation to find the value of x.

$x+4$ ╱╲ $x+2$
$x+5$

▭ $x+1$
$x+3$

$$x+4+x+5+x+2$$
$$3x+11$$

$$2(x+3) + 2(x+1)$$
$$2x+6 + 2x+2$$
$$4x+8$$

Equation

$$3x + 11 = 4x + 8$$
$$-3x \qquad -3x$$
$$\overline{}$$
$$11 = x + 8$$
$$-8 \qquad -8$$
$$\overline{}$$
$$\boxed{3 = x}$$

5) Nelson saw the sign to the right at a diner. He bought one of each item and spent $7.50.

Item	Cost ($)
Burger	$3x + 0.05$
Fries	x
Drink	$x + 0.10$

A) Write an equation to determine the value of x.

$3x + 0.05 + x + x + 0.10 = 7.50$

$5x + 0.15 = 7.50$
$\quad -0.15 \quad -0.15$
$\dfrac{5x}{5} = \dfrac{7.35}{5}$

$x = 1.47$

B) How much did the drink cost?

$1.47 + 0.10$

$\$1.57$

6) Solve the following equations. SHOW WORK AND CHECK YOUR ANSWER

A) $4(6x - 4) = 152$

$24x - 16 = 152$
$\quad +16 \quad +16$
$\dfrac{24x}{24} = \dfrac{168}{24}$

$x = 7$

B) $7(2n + 3) - 3n = -34$

$14n + 21 - 3n = -34$

$11n + 21 = -34$
$\quad -21 \quad -21$
$\dfrac{11n}{11} = \dfrac{-55}{11}$

$n = -5$

C) $95 = 9x + 1 - 2(x - 5)$

$95 = 9x + 1 - 2x + 10$

$95 = 7x + 11$
$-11 \qquad -11$
$\dfrac{84}{7} = \dfrac{7x}{7}$

$12 = x$

C) $8x + 3 = 2x$
$-8x \qquad -8x$

$\dfrac{3}{-6} = \dfrac{-6x}{-6}$

$-0.5 = x$

D) $4a + 7 = 10 + a$
$-a \qquad\qquad -a$

$3a + 7 = 10$
$\quad -7 \quad -7$
$\dfrac{3a}{3} = \dfrac{3}{3}$

$a = 1$

E) $2x + 7 = 11 - 2x$
$+2x \qquad\qquad +2x$

$4x + 7 = 11$
$\quad -7 \quad -7$
$\dfrac{4x}{4} = \dfrac{4}{4}$

$x = 1$

F) $2(2c + 12) = 4c + 18$

$4c + 24 = 4c + 18$
$-4c \qquad -4c$

$24 \neq 18$

No Solutions

G) $7(d - 2) = 5(d + 2)$

$7d - 14 = 5d + 10$
$-5d \qquad -5d$

$2d - 14 = 10$
$\quad +14 \quad +14$
$\dfrac{2d}{2} = \dfrac{24}{2}$

$d = 12$

H) $4(3z - 2) = 9z - 7$

$12z - 8 = 9z - 7$
$-9z \qquad -9z$

$3z - 8 = -7$
$\quad +8 \quad +8$
$\dfrac{3z}{3} = \dfrac{1}{3}$

$z = \dfrac{1}{3}$