

Name: Key

Date: _____

Combining Like Linear Terms Algebra 1 Homework

Skills

1. Which of the following terms could be combined with $6x$?

- (1) 6
- (3) $6y$
- (2) $-3x$
- (4) -6

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2. Which of the following is equivalent to the expression $3x + 7y - 5x + 2y$?

- (1) $9y - 2x$
- (3) $7xy$
- (2) $10x - 3y$
- (4) $5x + 2y$

$$\begin{aligned} 3x - 5x + 7y + 2y \\ -2x + 9y \end{aligned}$$

1

3. For each of the following expressions, simplify by combining like linear terms.

(a) $(6x + 10y) + (2x + 15y)$

$$\boxed{8x + 25y}$$

(b) $(-8x - 2y) + (7y + 10x)$

$$\boxed{2x + 5y}$$

(c) $(8x + 5) - (4x - 7)$

$$\boxed{4x - 2}$$

4. Solve each of the following equations by first combining like terms. Make sure to list the properties that you used to solve these equations.

prop.

(a) $3x - 9 + 3x = 39$
 $3x + 3x - 9 = 39$ Comm prop
 $6x - 9 = 39$ Combine like terms
 $+9 +9$ Add Prop. of Eq

 $\frac{6x}{6} = \frac{48}{6}$ Div. Prop. of =

$$\boxed{x = 8}$$

(b) $12 = 8x + 4 - 6x - 10$
 $12 = (8x - 6x) + 4 - 10$ Comm prop
 $12 = 2x - 6$ Combine like terms
 $+6 +6$ Add Prop. of =

 $\frac{18}{2} = \frac{2x}{2}$ Div. Prop. of =

$$\boxed{x = 9}$$

(c) $10x - 5 - 4x + 8 = -27$
 $10x - 4x - 5 + 8 = -27$ Comm prop
 $6x + 3 = -27$ Combine like terms
 $-3 -3$ Sub. Prop. of =

 $\frac{6x}{6} = \frac{-30}{6}$ Div. Prop. of =

$$\boxed{x = -5}$$

nope, just solve

(d) $-6x + 2.5 + 8x + 1.2 = 30.9$

$2x + 3.7 = 30.9$ C.L.T.
 $\frac{-3.7}{-3.7} \quad \frac{-3.7}{-3.7}$ Sub Prop.

$\frac{2x}{2} = \frac{27.2}{2}$ Div. Prop.

$x = 13.6$

(e) $11 = 8x + 10 - 5x + 5$

$11 = 3x + 15$ C.L.T.
 $\frac{-15}{-15} \quad \frac{-15}{-15}$ Sub Prop.

$-4 = 3x$ Div. Prop.

$x = -1\frac{1}{3}$

check by hand

(f) $4x + 20 + 2x + 34 = -27$

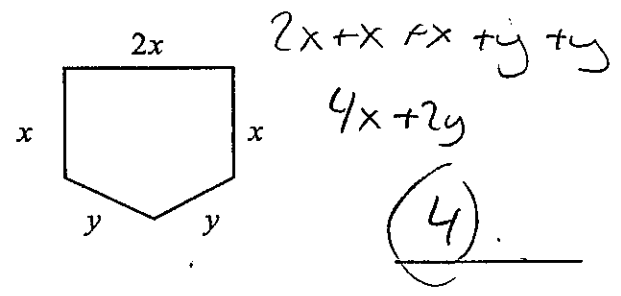
$6x + 54 = -27$ C.L.T.
 $\frac{-54}{-54} \quad \frac{-54}{-54}$ Sub Prop.

$6x = -81$ Div. Prop.

$x = -13\frac{1}{2}$

5. The home plate in baseball has the shape of a pentagon, a five-sided figure. The sides are marked as shown in the figure with the linear variables x and y . Which of the following represents the perimeter of this pentagon?

- (1) $6xy$
- (2) $3x + 2y$
- (3) $2x + 3y$
- (4) $4x + 2y$



Reasoning

6. Justify each of the following steps with a real number property.

(1) $12x + 2y + 4x + 3y = 12x + 4x + 2y + 3y$

(1) Commutative Prop. of +

(2) $= (12+4)x + (2+3)y$
 $= 16x + 5y$

(2) Distrib. Property

(3) Combine like terms