

T-COPY

ALGEBRAIC EXPRESSIONS

SHOW ALL YOUR WORK. REMEMBER TO USE BRACKETS WHEN SUBSTITUTING!!

1. If $x = -2$, evaluate

(a) $5x$

$$= 5(-2)$$

$$= -10$$

(b) $x+5$

$$= (-2)+5$$

$$= 3$$

(c) $x-6$

$$= (-2)-6$$

$$= -8$$

(d) x^2-3x+2

$$= (-2)^2 - 3(-2) + 2$$

$$= 4 + 6 + 2$$

$$= 12$$

(e) $-2x$

$$= -2(-2)$$

$$= 4$$

(f) x^3

$$= (-2)^3$$

$$= -8$$

(g) $3-x$

$$= 3 - (-2)$$

$$= 3 + 2$$

$$= 5$$

(h) $2x^2+2x-4$

$$= 2(-2)^2 + 2(-2) - 4$$

$$= 2(4) + 2(-2) - 4$$

$$= 8 - 4 - 4$$

$$= 0$$

2. If $x = -8$ and $y = 2$, evaluate

(a) xy

$$= (-8)(2)$$

$$= -16$$

(b) $3xy$

$$= 3(-8)(2)$$

$$= -24(2)$$

$$= -48$$

(c) $x+y$

$$= (-8) + (2)$$

$$= -6$$

(d) $x-y$

$$= (-8) - (2)$$

$$= -10$$

(e) $y-x$

$$= (2) - (-8)$$

$$= 2 + 8$$

$$= 10$$

(f) $-2xy$

$$= -2(-8)(2)$$

$$= 16(2)$$

$$= 32$$

(g) $\frac{x}{y}$

$$= \frac{-8}{2}$$

$$= -4$$

(h) $x+y+8$

$$= (-8) + (2) + 8$$

$$= -6 + 8$$

$$= 2$$

(i) $x^2-3x+10$

$$= (-8)^2 - 3(-8) + 10$$

$$= 64 - 3(-8) + 10$$

$$= 64 + 24 + 10$$

$$= 88 + 10$$

$$= 98$$

(j) $2(x+y)$

$$= 2[(-8) + (2)]$$

$$= 2(-6)$$

$$= -12$$

(k) $y^2-2y+12$

$$= (2)^2 - 2(2) + 12$$

$$= 4 - 2(2) + 12$$

$$= 4 - 4 + 12$$

$$= 12$$

(l) $2+y+y^2$

$$= 2 + (2) + (2)^2$$

$$= 2 + 2 + 4$$

$$= 4 + 4$$

$$= 8$$

3. If $x = 5$ and $y = -3$, evaluate

$$\begin{aligned} \text{(a) } -x \\ &= -(5) \\ &= -5 \end{aligned}$$

$$\begin{aligned} \text{(b) } -y \\ &= -(-3) \\ &= 3 \end{aligned}$$

$$\begin{aligned} \text{(c) } -xy \\ &= -(5)(-3) \\ &= (-5)(-3) \\ &= 15 \end{aligned}$$

$$\begin{aligned} \text{(d) } -(x+y) \\ &= -[(5) + (-3)] \\ &= -(2) \\ &= -2 \end{aligned}$$

$$\begin{aligned} \text{(e) } -(y-x) \\ &= -[(-3) - 5] \\ &= -(-8) \\ &= 8 \end{aligned}$$

$$\begin{aligned} \text{(f) } -(x-y) \\ &= -[(5) - (-3)] \\ &= -[5 + 3] \\ &= -(8) \\ &= -8 \end{aligned}$$

$$\begin{aligned} \text{(g) } x^2 + 3x + y \\ &= (5)^2 + 3(5) + (-3) \\ &= 25 + 3(5) - 3 \\ &= 25 + 15 - 3 \\ &= 40 - 3 \\ &= 37 \end{aligned}$$

$$\begin{aligned} \text{(h) } y^2 - 5 - 20 \\ &= (-3)^2 - 5 - 20 \\ &= 9 - 5 - 20 \\ &= 4 - 20 \\ &= -16 \end{aligned}$$

4. Write each ratio in simplest form.

$$\begin{aligned} \text{(a) } 2:4 \quad \div 2 \\ &= 1:2 \end{aligned}$$

$$\begin{aligned} \text{(b) } 3:9 \quad \div 3 \\ &= 1:3 \end{aligned}$$

$$\begin{aligned} \text{(c) } 8:10 \quad \div 2 \\ &= 4:5 \end{aligned}$$

$$\begin{aligned} \text{(d) } 12:4 \quad \div 4 \\ &= 3:1 \end{aligned}$$

$$\begin{aligned} \text{(e) } 36:72 \quad \div 36 \\ &= 1:2 \end{aligned}$$

$$\begin{aligned} \text{(f) } 12:15 \quad \div 3 \\ &= 4:5 \end{aligned}$$

$$\begin{aligned} \text{(g) } 36:6 \quad \div 6 \\ &= 6:1 \end{aligned}$$

$$\begin{aligned} \text{(h) } 5:25 \quad \div 5 \\ &= 1:5 \end{aligned}$$

$$\begin{aligned} \text{(i) } 7:21 \quad \div 7 \\ &= 1:3 \end{aligned}$$

$$\begin{aligned} \text{(j) } 3:24 \quad \div 3 \\ &= 1:8 \end{aligned}$$

$$\begin{aligned} \text{(k) } 20:24 \quad \div 4 \\ &= 5:6 \end{aligned}$$

$$\begin{aligned} \text{(l) } 42:7 \quad \div 7 \\ &= 6:1 \end{aligned}$$