

Name:

Date:

1. Use the Order of Operations to simplify the following expressions.

a. $5 - 2 \cdot 3^2 = 5 - 2 \cdot 9 = 5 - 18 = -13$

a. $(-2)^2 = 4$

b. $18 \div 3 \cdot 6 = (18 \div 3) \cdot 6 = 6 \cdot 6 = 36$

c. $-2^2 = -(2^2) = -4$

d. $(5 - 3)(5 + 3) = 2 \cdot 8 = 16$

e. $24 \cdot \frac{1}{4} \div -2 = 6 \div (-2) = -3$

f. Why are your answers for parts (b) and (d) different?

$$(-2)^2 = (-2) \cdot (-2) = 4$$

$$-2^2 = -(2 \cdot 2) = -4$$

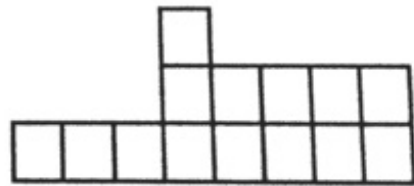
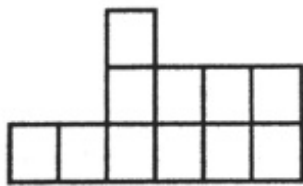
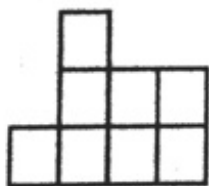
* take opp.
sign of 22. Copy the pattern below onto graph paper. Draw the 1st and 5th figures on your paper.

Figure 2

Figure 3

Figure 4

1. How many tiles are in each figure?

Fig: Tiles

1: 5

3: 11

5: 17

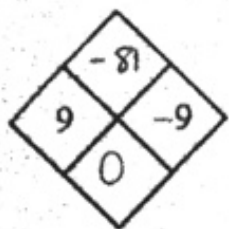
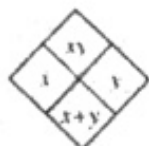
2: 8

4: 14

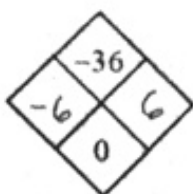
2. Describe how the pattern is changing. Each figure has 3 more tiles

3. How many tiles would the 6th figure have? The 10th figure?6th: 20 tiles10th: 32 tiles

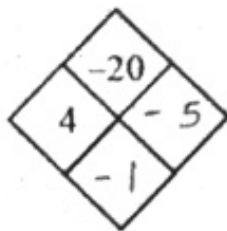
3. Copy and complete each of the Diamond Problems below. The pattern used in the Diamond Problems is shown at right.



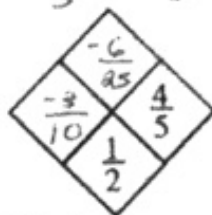
b.



c.



d.



$$\frac{-3}{10} - \frac{4}{5} = \frac{-6}{20} - \frac{16}{20} = \frac{-22}{20} = \frac{-11}{10}$$

$$\frac{4}{5} + x = \frac{-11}{10}$$

$$x = \frac{-11}{10} - \frac{4}{5} = \frac{-11}{10} - \frac{8}{10} = \frac{-19}{10}$$

$$x = \frac{8}{10} - \frac{8}{10} = \frac{-3}{10}$$

4. Evaluate each expression

a. $2 \sqrt{|3-4|} = 2 \div (1) = \boxed{2}$

b. $11 + 15 = 81$

c. $-19 * |-6| + \sqrt[3]{-8} = -19 \cdot 6 + (-2) = -114 + (-2) = \boxed{-116}$

d. $-11 - \sqrt{16} = -11 - 4 = \boxed{-15}$

should have said
 $11 - 6 + 15$
 $11 - 6 + 15$
 $66 + 15$
 81

5. Use the function machine shown at right to answer the following questions.

a. If the input is -8 , what is the output?

45

$$-6(-8) - 3$$

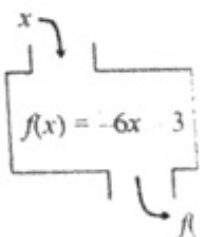
$$48 - 3$$

b. If the output was 21, what was the input?

$$21 = -6x - 3$$

$$24 = -6x$$

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



6. Find $f(4)$ for each function below.

a. $f(x) = -|x-7| + 3$ $f(4) = -|4-7| + 3 = -3 + 3 = \boxed{0}$

b. $f(x) = \frac{\sqrt{x+12}}{4}$ $f(4) = \frac{\sqrt{4+12}}{4} = \frac{\sqrt{16}}{4} = \frac{4}{4} = \boxed{1}$

c. $f(x) = 2 - \sqrt[3]{x+23}$ $f(4) = 2 - \sqrt[3]{4+23} = 2 - \sqrt[3]{27} = 2 - 3 = \boxed{-1}$

7. Solve each equation. Check your solution.

a. $3x - 1 = 4x + 8 - x \Rightarrow 3x - 1 = 3x + 8 \Rightarrow -1 = 8$ no solution

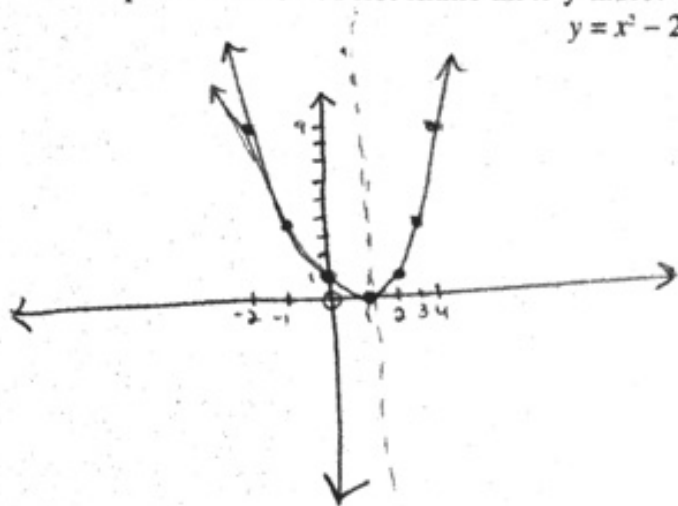
b. $-10 + 5x = 7x - 4 \Rightarrow -6 = 2x \Rightarrow -3 = x$

c. $28 - 6x + 4 = 30 - 3x$ $x = \frac{2}{3}$

d. $4x - 1 = 9x - 1 - 5x$
 $\Rightarrow 4x - 1 = 4x - 1$ All real numbers

8. Graph and completely describe (special points, intercepts, shape, etc.) the equation below. First make an x-y table.

$$y = x^2 - 2x + 1.$$



x	-2	-1	0	1	2
y	9	4	1	0	1

↑
vertex

*Next points will be:

(3, 4)

(4, 9)

shape: parabola

x intercept: (1, 0)

y int: (0, 1)

max: none

~~vertex~~ vertex: (1, 0)

minimum value: $y = 0$ (when $x = 1$)

axis of symmetry: at $x = 1$