Name:_____ Per:____

Geometry Unit 1 – Expressions and Formulas

Unit 1 – Day 1 – Order of Operations

Objective: **Students will be able to (SWBAT) simplify expressions using order of operations.**

PEMDAS:

P:

E:

MD:

AS:

Examples: (Practice By Hand)

1. $5^3(2-3) \div 5 + 13$

2. **57- 11** $(\sqrt{3^2+4^2})$

Examples: (Practice using Calculator)

3. $6(14 - -9) + 2^5 \div 4$

4. $\sqrt{(6-10)^2+8}$

<u>Things to Remember:</u> Integer Rules

Adding and Subtracting:

****a is further from ZERO**

a – b **a – – b** **–a – b** **b – a**

Multiplying and Dividing:

a(-b) **-a(b)** **-a(-b)** **a(b)**

YOU TRY:

5. $\sqrt{36} - 18 \div 3(29 - 12)$

6. $-32(-6) + 7^0 - 5$

Unit 1 – Day 2 – Simplifying Expressions

Objective: **SWBAT will simplify expressions through methods that include combining like terms and distributive property.**

Simplifying Expressions:

Combining Like Terms

Adding/Subtracting Variables

$5x - 7x - 8y$

$15z^2 - 16z + 22z^2$

Multiplying/Dividing Variables

$6x(7x^2)$

$\frac{36g^3}{9g}$

Distributive Property

a(b + c)

(a + b)c

a(b – c)

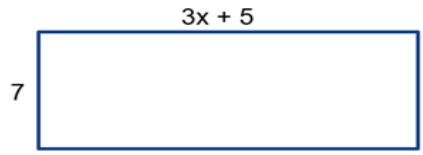
-a(b - c)

$y^2(6y - 11x)$

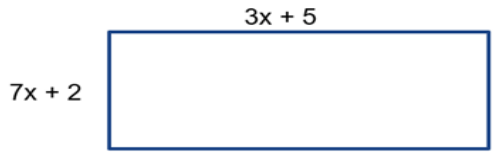
$(6a - 8)a$

$d^4(6d - 7c^2)$

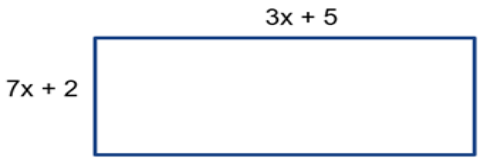
Write an expression to find the area of the rectangle. Simplify the expression.



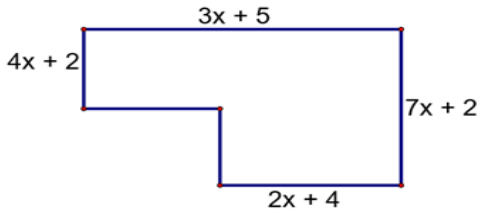
Write an expression to find the perimeter of the rectangle. Simplify the expression.



If x = 2.5, find the perimeter of the rectangle.



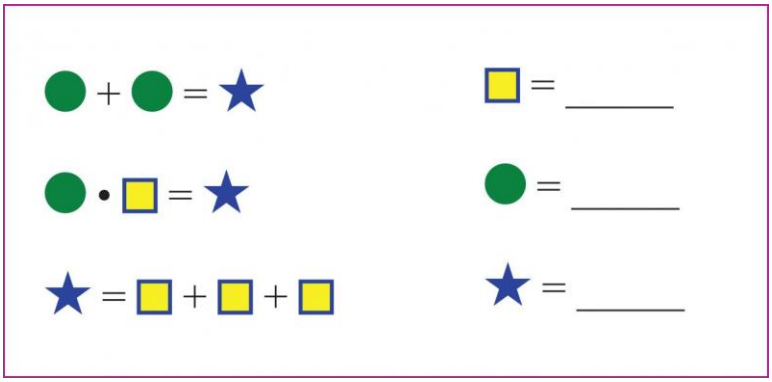
Write an expression to find the perimeter of the shape. Simplify the expression.

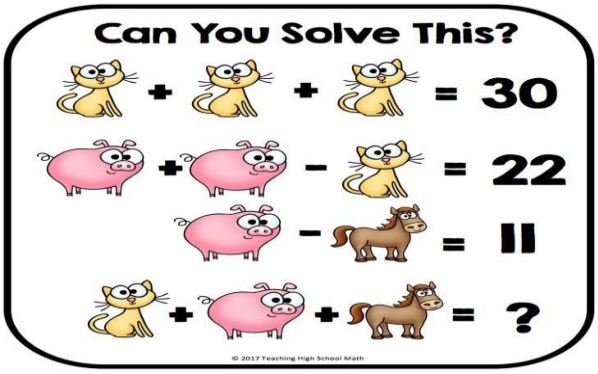


Unit 1 – Day 3 – Evaluating Expressions

Objective: **SWBAT will evaluate expressions through the substitution method.**

Evaluating Expressions:





Examples:

1. $5x - 4y$ when $x = 2$, $y = -7$

2. $10m^2 + (p + 40)$ when $m = 6$, $p = -1$

Formulas

3. Solve for m using the formula → $m = \frac{y_2 - y_1}{x_2 - x_1}$

when $x_2 = -5$ $x_1 = 4$ $y_2 = 6$ $y_1 = -18$

4. Solve for the area of the trapezoid using the formula → $A = \frac{1}{2}(b_1 + b_2)h$

when $b_1 = 6$, $b_2 = 11$, $h = 8$

5. Find the height of the cylinder using the Formula → $\boldsymbol{V = \Pi r^2 h}$

When Π = 3.14, r = 4, V= 452.16

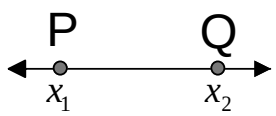
Unit 1 – Day 4 – Distance Formula

Objective: SWBAT find the distance between two points by substituting values into the formula.

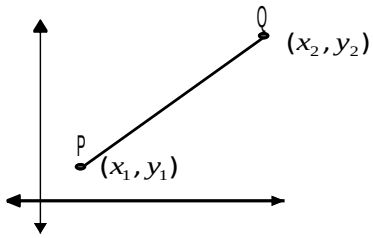
Distance

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Distance on a number-line

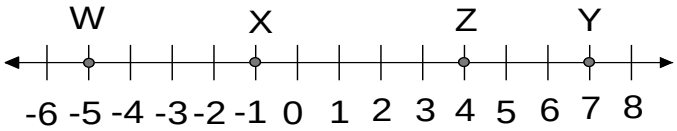


Distance on a Coordinate Plane



Examples

1. **Use the number line to find distance of each segment**



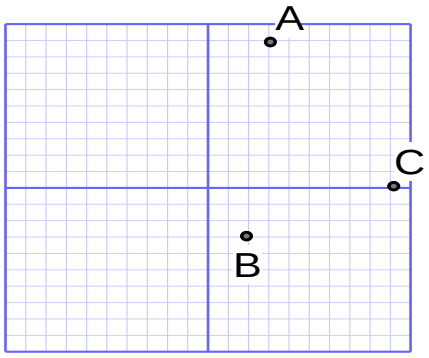
A) XY **B) WZ** **C) YW**

<u>Find the distance between the following points.</u>

2. $P(3,5), Q(-3,13)$ **3.** $A(-4,-7), B(0,15)$ **4.** $M(1,0), P(0,1)$

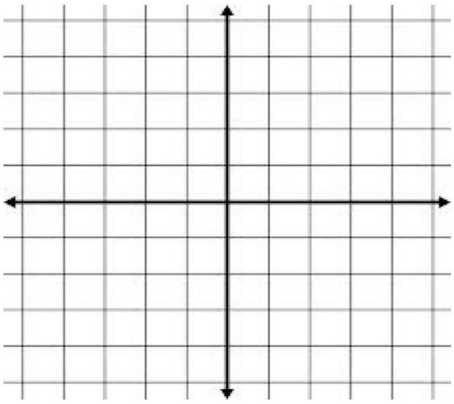
5. Find the distance of the following segments.

AB

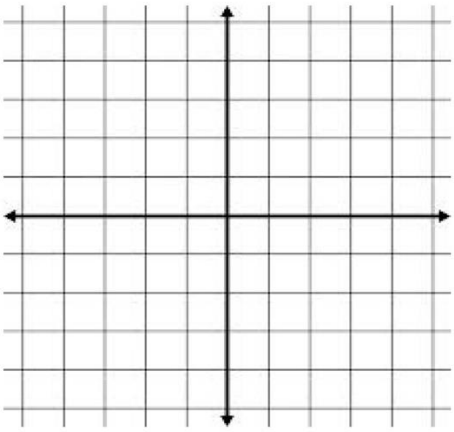


AC

6. Paul and Susan are standing outside City Hall. Paul walks three blocks north and two blocks west while Susan walks five blocks south and fourth blocks east. If city Hall represents the origin, find the distance of Paul and Susan's new locations.



6. Create two coordinate points (x,y) that have a distance of 5 units.
What type of line was created? Find the slope using the slope formula.



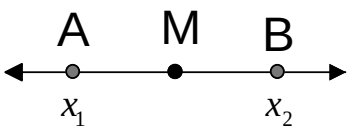
Unit 1 – Day 5 – Midpoint Formula

Objectives: SWBAT find the midpoints between two points and find the endpoint of a segment given a midpoint.

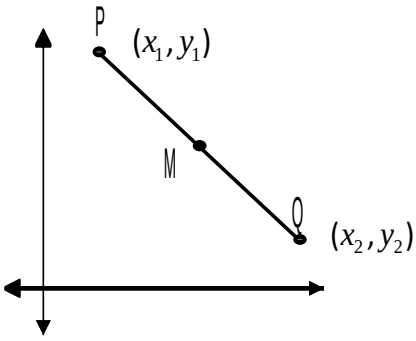
Midpoint

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

Midpoint on a Line

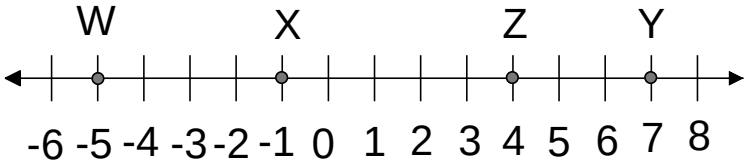


Midpoint on a Coordinate Plane



Examples

1. Use the number line to find midpoint of each segment



A) XY

B) WZ

2. Find the midpoint of $\overline{MN}$, $M = (1, 4)$ and $N = (7, 6)$.

<u>Find the midpoint between the following points.</u>

3. $A(3,5), B(-3,13)$

4. C(-4, -7), D(0,15)

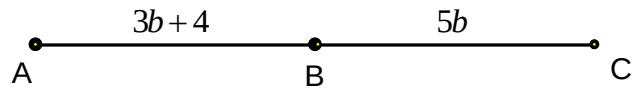
5. Find the coordinates of A if *B* = (10 , 8) and the midpoint of AB = (7 , 10).

Find the coordinates of the missing endpoint if *E* is the midpoint of DF.

6. $D(-3,-8)$, $E(1,2)$

7. $F(5,11)$, $E\left(\frac{5}{2},6\right)$

8 - In the figure, B is the midpoint of $\overline{AC}$, find the value of b.



10 - Paul and Susan are standing outside City Hall. Paul walks three blocks north and two blocks west while Susan walks five blocks south and fourth blocks east. If City Hall represents the origin, find the midpoint of Paul and Susan's new locations.