

Unit 6- Variables & Patterns- Review #1

Name ANSWER KEY Group _____ Date _____

A. Use the equations relating to building and cost plans for the Wild World climbing wall to answer these questions.

1. The equation $C = 100 + 300n$ tells the cost C of building a frame of n sections. How many sections can be built for a cost of \$4,000?

$$C = 100 + 300n$$

$$4,000 = 100 + 300n$$

$$4,000 - 100 = 300n$$

$$3,900 = 300n$$

$$3,900 \div 300 = n \rightarrow 13 = n$$

13 sections can be built for a cost of \$4,000.

2. The equation $A = 2n$ tells the area A of a frame with n sections. How many sections must be built to make a climbing wall with an area of 48 square meters?

$$A = 2n$$

$$48 = 2n$$

$$48 \div 2 = n$$

$$24 = n$$

24 sections must be built to make a climbing wall with an area of 48 m².

B. Solve the following inequality and graph the solution on the number line.

3. $12x < 24$

$$x < 24 \div 12$$

$$x < 2$$

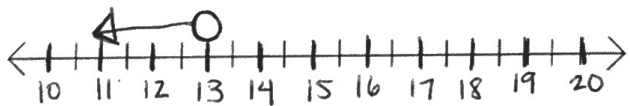
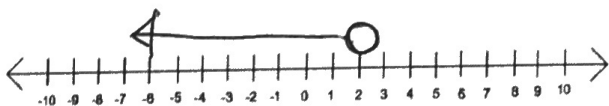
4. $25 > m + 12$

$$25 - 12 > m$$

$$13 > m$$

$$m < 13$$

Remember you need to have the variable 1st to graph it properly!



5. $\frac{50}{n} \leq 10$

$$50 \div n \leq 10$$

$$50 \leq 10 \cdot n$$

$$50 \div 10 \leq n$$

$$5 \leq n$$

$$n \geq 5$$

6. $7 \geq m - 4$

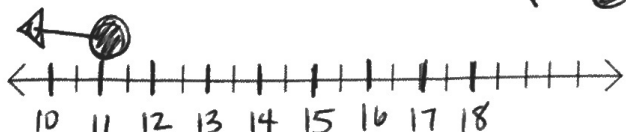
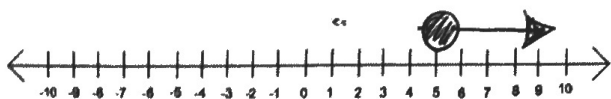
$$7 + 4 \geq m$$

$$11 \geq m$$

$$m \leq 11$$

Remember

$<$	$>$
less than	greater than
$\leftarrow \circ$	$\circ \rightarrow$
\leq	\geq
less than or equal to	greater than or equal to
$\leftarrow \bullet$	$\bullet \rightarrow$



C. Use symbols to express the rule as an equation. Use single letters for the variables. Identify what each letter represents.

7. The area of a triangle is one-half its base multiplied by its height.

$$A = \frac{1}{2} \cdot b \cdot h$$

A = Area
b = base
h = height

8. The cost for tickets to the Stanley Cup Playoffs is \$120 per person.

$$C = 120 \cdot P$$

C = cost
P = person

D. The tour operators thought it would be a good idea to get a souvenir T-shirt for each customer who went on the Ocean Bike Tour. They found a company who would sell them shirts with their logo for \$2.50 each.

9. Complete the table and the graph to show number of shirts and cost below. SHOW ALL WORK and be sure to label!

Label: (1) the x axis (2) y axis (3) Number of shirts (4) Cost on graph (5) Title

Number of Shirts	10	20	30	40	50	60	70	80	100
Cost	25	50	75	100	125	150	175	200	250

$$T = 2.50 \cdot 10$$

$$T = 25.00$$

$$T = 2.50 \cdot 20$$

$$T = 50.00$$

$$T = 2.50 \cdot 30$$

$$T = 75.00$$

$$T = 2.50 \cdot 40$$

$$T = 100.00$$

$$T = 2.50 \cdot 50$$

$$T = 125.00$$

$$T = 2.50 \cdot 60$$

$$T = 150.00$$

$$T = 2.50 \cdot 70$$

$$T = 175.00$$

$$T = 2.50 \cdot 80$$

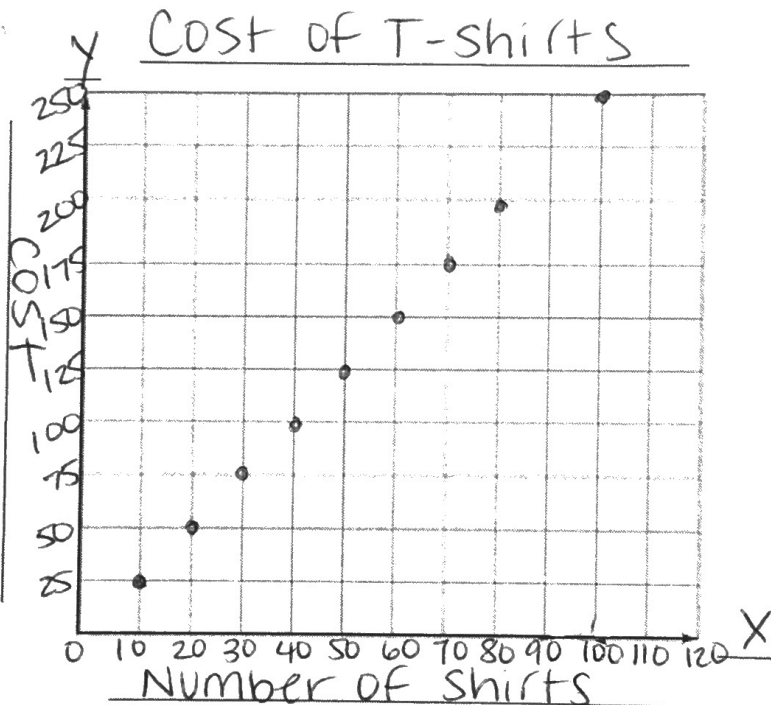
$$T = 200.00$$

$$T = 2.50 \cdot 100$$

$$T = 250$$

Extra credit
Answer:

Mrs. B is going to Ireland, Barcelona, & Ibiza this summer.



10. Write an equation that shows how to determine the T-shirt cost, T, for any number of customers, n.

$$T = 2.50 \cdot n$$

11. Use the equation above to find how many shirts did the company buy if their total cost is \$632

$$63 = 2.50 \cdot n$$

$$63 \div 2.50 = n$$

$$25.2 = n$$

The company bought 25.2 shirts.

$$\begin{array}{r} 25.2 \\ 2.50 \overline{) 63.00} \\ \underline{-500} \\ 1300 \\ \underline{-1250} \\ 500 \end{array}$$

Name _____

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Use the equations relating to building and cost plans for the Wild World climbing wall to answer these questions.

1. The equation $L = 4n + 2$ gives the length L of the light string needed for side and top edges of a climbing wall with n sections in its frame. What size frame (number of sections) can be lighted with a string that is 38 meters long?

$$L = 4n + 2$$

$$38 = 4n + 2$$

$$38 - 2 = 4n$$

$$36 = 4n$$

$$\rightarrow 36 = 4n$$

$$36 \div 4 = n$$

$$9 = n$$

The number of sections that can be lighted with a 38m string are 9 sections.

2. A tomato plant was 9 inches tall when it was planted in June. When the first tomatoes were ripe, the plant was 42 inches tall. How many inches did the plant grow?

$$\text{inches grew} = 9$$

$$9 + 9 = 42$$

$$42 - 9 = 9$$

$$33 = 9$$

The plant grew 33 inches.

Use symbols to express the rule as an equation. Use single letters for the variables. Identify what each letter represents.

3. The perimeter of a rectangle is twice its length plus twice its width.

P = perimeter

L = Length

W = width

$$P = 2 \cdot L + 2 \cdot W$$

Where is Mrs. B going this summer?

Extra credit question

4. Solve the equation for r , when $b = 30$:

$$b = 10 + 4r$$

$$b = 10 + 4r$$

$$30 = 10 + 4r$$

$$30 - 10 = 4r$$

$$20 = 4r$$

$$\rightarrow 20 = 4r$$

$$20 \div 4 = r$$

$$5 = r$$

$$r = 5$$

5. Solve the equation for a , when $t = 40$:

$$t = 10 + 3a$$

$$t = 10 + 3a$$

$$40 = 10 + 3a$$

$$40 - 10 = 3a$$

$$30 = 3a$$

$$\rightarrow 30 = 3a$$

$$30 \div 3 = a$$

$$10 = a$$

$$a = 10$$

6. Solve the equation for d , when $h = 22$:

$$h = 1 + 3d$$

$$h = 1 + 3d$$

$$22 = 1 + 3d$$

$$22 - 1 = 3d$$

$$21 = 3d$$

$$\rightarrow 21 = 3d$$

$$21 \div 3 = d$$

$$7 = d$$

$$d = 7$$

Complete the tables.

8.

$\frac{40}{r} = s$					
	(A)	(B)	(C)	(D)	(E)
r	2	4	5	8	
s	20	10	8	5	1

(A) $\frac{40}{2} = s$ $\frac{40}{r} = 10$ (B) $\frac{40}{5} = s$
 $20 = s$ $\frac{40}{10} = r$ $8 = s$

(D) $\frac{40}{8} = s$ (E) $\frac{40}{r} = 1$ $40 = r$
 $5 = s$ $4 = r$ $\frac{40}{1} = r$

Solve and graph the following inequalities:

10. $\frac{s}{2} < 6$
 $s \div 2 < 6$
 $s < 6 \cdot 2$
 $s < 12$

11. $\frac{g}{5} > 4$
 $g \div 5 > 4$
 $g > 4 \cdot 5$
 $g > 20$

9.

$13 - x = y$					
	(A)	(B)	(C)	(D)	(E)
x	13	2	5	9	
y	0	11			1

(A) $13 - x = 0$ (B) $13 - x = 11$ (C) $13 - x = 1$
 $13 - 0 = x$ $13 - 11 = x$
 $13 = x$ $2 = x$

12. $4r \leq 20$
 $r \leq 20 \div 4$
 $r \leq 5$



13. $2f > 8$
 $f > 8 \div 2$
 $f > 4$



Choose the equation that best suits the word problem and find the value of x.

14. There are 12 golf balls in a bucket. There are x white golf balls and 5 orange golf balls.

Which equation illustrates this situation? (Circle one.)

$x - 5 = 12$

$x + 5 = 12$

$12 + x = 5$

$5x = 12$

options: $x + 5 = 12$
 $5 + x = 12$
 solve $12 - 5 = x$
 $7 = x$
 $12 - x = 5$

What is the value of x? 7

15. You have \$x. You spend \$3 to play golf. You have \$8 left.

Which equation illustrates this situation? (Circle one.)

$\$3 - \$x = \$8$

$\$x + 3 = \8

$\$8 - \$3 = \$x$

$\$x - \$3 = \$8$

options: $x - 3 = 8$
 $x - 8 = 3$
 $8 + 3 = x$
 solve $3 + 8 = x$
 $11 = x$

What is the value of x? 11