> **Geometry**
> **SUMMER WORK**

YOUR NAME: _____

Directions: The concepts covered in this packet are skills that students should have mastered in Algebra 1. If you are drawing a blank, please refer to the problems that have already been completed for you.

Rationale: The math course you are starting next school year has some high expectations. Therefore, we are asking for you to work on the skills in this packet to be better prepared for this course. The skills include:

(1) follow order of operations appropriately in all situations
(2) solve algebraic equations and proportions
(3) graphing coordinate points, lines and figures
(4) perimeter and area of circles, triangles and quadrilaterals
(5) naming line segments and angles

To refresh on these topics, you'll need to practice these skills in the weeks leading up to the beginning of the 2020-2021 school year.

Resources: For each even numbered problem you need to complete, there is an odd-numbered example problem worked out in detail. If that's not enough to guide your work, then we suggest you google the topic you are struggling with or go to one of the following websites & search the topic...

https://www.youtube.com/channel/UCcfzvi8xPFQToNua6HRDflA/playlists (English & Spanish Videos)

https://www.khanacademy.org/

http://www.purplemath.com/

http://www.mathgoodies.com/students.html

This packet will count as a grade, so please take the time to complete these problems.

Thank you,

Mr. Bazon
Mrs. Burns
Mrs. Hutchinson
Mrs. Frias
Mr. Phillips
Mrs. Tello

Learning Target #1: I can correctly perform order of operations and evaluate expressions.

ORDER OF OPERATIONS	GROUPING SYMBOLS (P)	EXPONENTS & ROOTS (E)	MULTIPLICATION & DIVISION (M) (D)	ADDITION & SUBTRACTION (A) (S)
Parenthesis Exponents Multiplication Division Addition Subtraction	Parentheses ( ) OR Brackets [ ] Absolute values | |	Exponents Ex: $3^2 \Rightarrow 3 \cdot 3 = 9$ OR Roots Ex: $\sqrt{25} = 5$	MUST be done from LEFT to RIGHT!! Ex: $18 \div 6 \cdot 3$ $3 \cdot 3$ 9	MUST be done from LEFT to RIGHT!! Ex: $4 - 2 + 7$ $2 + 7$ 9

#1 – 4: Evaluate.

1a. $4 + 3 \cdot 4 \div 2 - 9$

$4 + 12 \div 2 - 9$

$4 + 6 - 9$

$10 - 9$

$\boxed{1}$

1b. $20 - 6 \div 6 \cdot 2 - 11$

2a. $4 + 3(5-6)^2$

$4 + 3(-1)^2$

$4 + 3(1)$

$4 + 3$

$\boxed{7}$

2b. $15 - (3-7)^2 \cdot 3$

3a. $(2x)^2 - y$ when $x = 3,\ y = 17$

$(2(3))^2 - 17$

$(6)^2 - 17$

$36 - 17$

$\boxed{19}$

3b. $5x - 6y^3$ when $x = -7,\ y = 1$

4a. $\frac{1}{2}(x-7) - 3x$ when $x = -11$

$\frac{1}{2}(-11-7) - 3(-11)$

$\frac{1}{2}(-18) - 3(-11)$

$-9 + 33$

$\boxed{24}$

4b. $b^2 - 4ac$ when $a = 1,\ b = 2,\ c = -3$

Learning Target #2: I can solving algebraic equations.

#5 – 11: Solve.

5a. $4x - 3 = 9$

$+3 \quad +3$

$\dfrac{4x}{4} = \dfrac{12}{4}$

$\boxed{X = 3}$

5b. $12x + 1 = -11$

6a. $3x - 6 = 5x + 12$

$-3x \qquad -3x$

$-6 = 2x + 12$

-12

-12

$-18 = 2x$

$\boxed{-9 = X}$

6b. $6 - 7x = 1 - 8x$

7a. $-3(2x + 5) = 20$

$-6x - 15 = 20$

$+15 \quad +15$

$\dfrac{-6x}{-6} = \dfrac{35}{-6}$

$\boxed{X = -\dfrac{35}{6}}$

7b. $-8(x - 7) = -120$

8a. $2(4 - x) = 16 + 2x$

$8 - 2x = 16 + 2x$

$+2x \qquad +2x$

$8 = 16 + 4x$

$-16 \quad -16$

$\dfrac{-8}{4} = \dfrac{4x}{4}$

$\boxed{-2 = X}$

8b. $18 - 8x = 2(3 - 7x)$

9a. $4 - 3(4x + 6) = 1$

$4 - 12x - 18 = 1$

$-12x - 14 = 1$

$\ +14\ +14$

$\overline{}$

$-12x = 15$

$\overline{-12}\ \ \overline{-12}$

$\boxed{x = -\dfrac{5}{4}}$

9b. $3x + 8(3 + 8x) = -378$

10a. $5(3x - 2) + 10 = 2(5 - 6x)$

$15x - 10 + 10 = 10 - 12x$

$15x = 10 - 12x$

$+12x +12x$

$\overline{}$

$27x = 10$

$\overline{27}\ \ \ \overline{27}$

$\boxed{x = \dfrac{10}{27}}$

10b. $2(x + 1) + 3x = 3x - 1$

11a. $^{3}\left(\frac{2}{3}m + 5 = 4m - 9\right)3$

$2m + 15 = 12m - 27$

$-2m -2m$

$\overline{}$

$15 = 10m - 27$

$+27 +27$

$\overline{}$

$\dfrac{42}{10} = \dfrac{10m}{10}$ $\boxed{\dfrac{21}{5} = m}$

11b. $4 - \frac{5}{6}x = \frac{1}{2}x + 2$

Learning Target #3: I can solve proportions.

#12-14: Solve.

12a. $\dfrac{x}{9} \diagup\!\!\!\!\diagdown \dfrac{4}{5}$

$\dfrac{5x}{5} = \dfrac{45}{5}$

$\boxed{X = 9}$

12b. $\dfrac{x}{5} = \dfrac{10}{4}$

13a. $\dfrac{3}{4} \diagup\!\!\!\!\diagdown \dfrac{x-6}{8}$

$4(x-6) = 24$

$4x - 24 = 24$
$\quad +24 \quad +24$
$\dfrac{4x}{4} = \dfrac{48}{4}$
$\boxed{X = 12}$

13b. $\dfrac{2}{x-6} = \dfrac{4}{7}$

14a. $\dfrac{7}{x+3} \diagup\!\!\!\!\diagdown \dfrac{3}{x+7}$

$\qquad \sim 3(x+3)$
$7(x+7) \sim$
$7x + 49 = 3x + 9$
$-3x \qquad\quad -3x$
$4x + 49 = 9$
$\quad -49 \quad -49$
$\dfrac{4x}{4} = \dfrac{-40}{4}$
$\boxed{X = -10}$

14b. $\dfrac{x+2}{10} = \dfrac{x-10}{4}$

14c. $\dfrac{a-1}{a+6} = \dfrac{5}{10}$

Learning Target #4: I can plot points on the xy-plane.

#15, plot Coordinate Points E-J.

15a. A(2,6)   B(5, -3)

15b. E(1, -3)   F(3,4)   G(-1,-8)

C(-3, 5)   D(-4, -6)

H(-7, 1)   I(7,-7)   J(-5, 6)
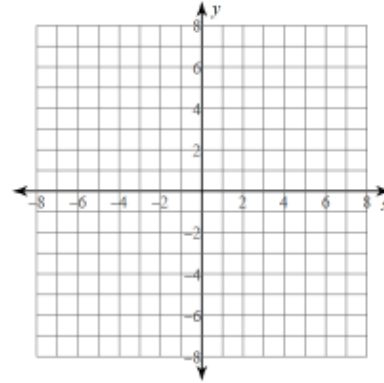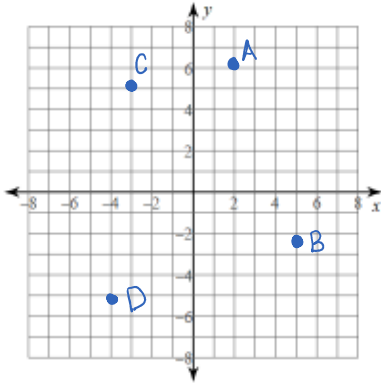
Learning Target #5: I can graph quadrilaterals and triangles on the coordinate plane.

#16, graph the quadrilateral or triangle based on the given coordinate points.

16a. Given:

A(3,4)   B(-3, 2)   C(1, -3)
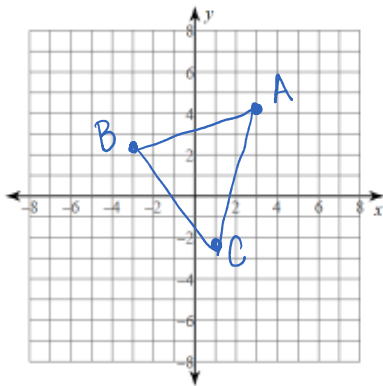
16b. Given:

D(4, 6)   E(-7, 4)   F(-5, -4)
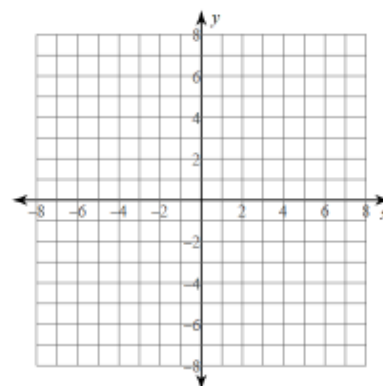
16c. Given:

W(-6, 0)   X(-4, 5)   Y(4, 5)   Z(6, -2)
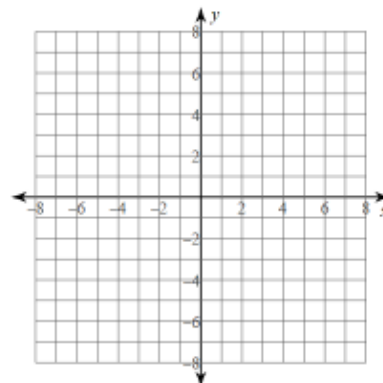
Learning Target #6: I can graphing linear equations.

#17-20: Graph.

17a. $y = \dfrac{1}{2}x + 3$

start on y-axis at 3
count slope up 1, right 2
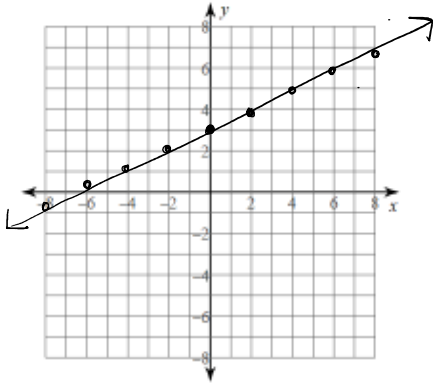
17b. $y = \dfrac{3}{4}x - 7$
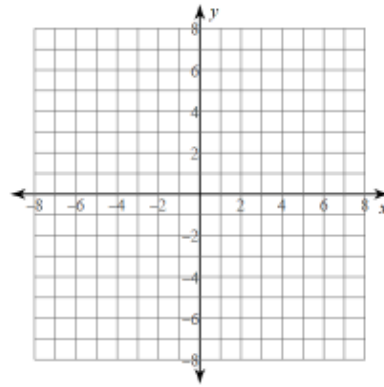
18a. $y = \dfrac{-2x}{1} + 0$

start on y-axis at 0
count down 2, right 1
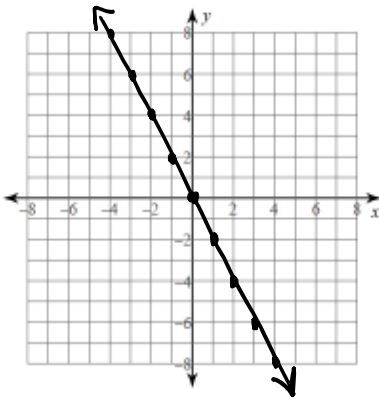
18b. $y = -3x + 4$
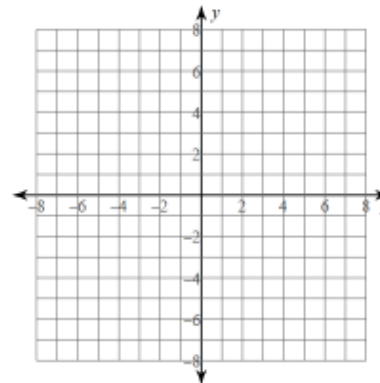
18c. $y = -x$
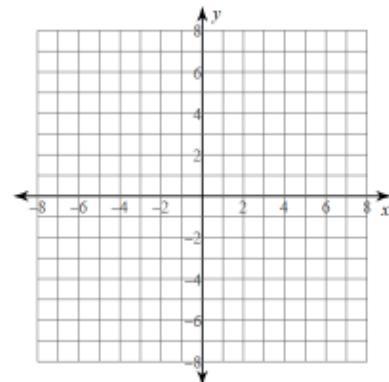
19a. $x = 3$

X	y
3	1
3	2
3	3

* Plot each point
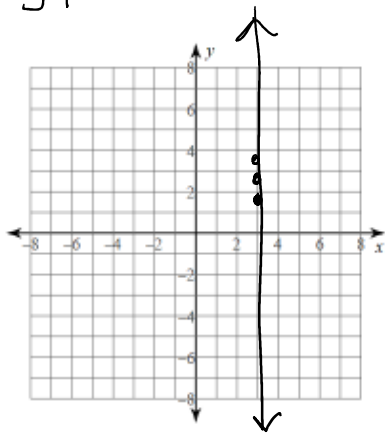
The x-value has to be 3, the y-value can be any number.

19b. $x = -2$
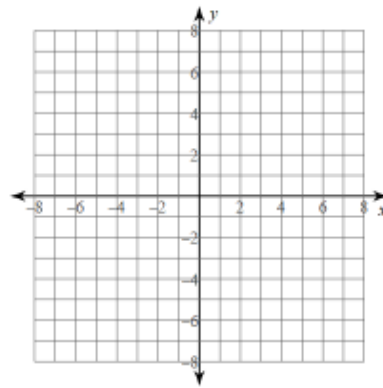
20a. $y = 4$

X	y
1	4
2	4
3	4

* Plot each point
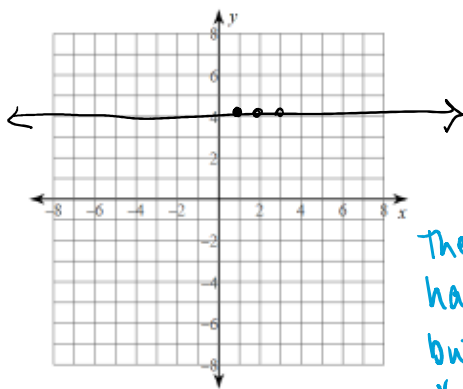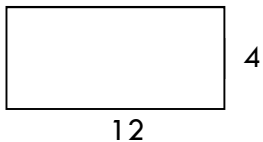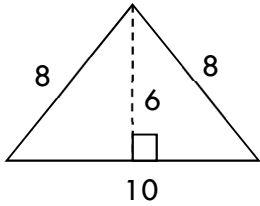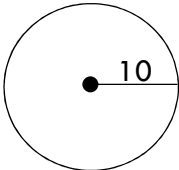
The y-value has to be 4, but the x-value can be any number.

20b. $y = 5$
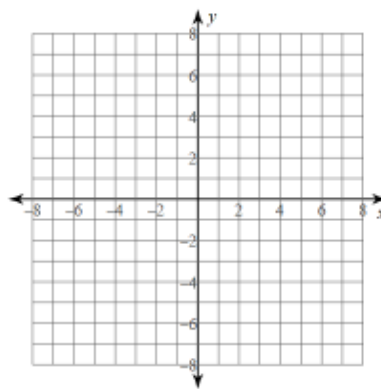
Learning Target #7: I can determine the area of a quadrilateral, triangle and circle.

Type	Example	Formula
Area	$A = 12 \cdot 4$ $= 48 \text{ units}^2$ 4 12	$A = base \bullet height$
	8 8 6 10 $A = \frac{1}{2} \cdot 10 \cdot 6$ $= 5 \cdot 6$ $= 30 \text{ units}^2$	$A = \frac{1}{2} base \bullet height$ or $\frac{base \bullet height}{2}$
	10 $A = \pi \cdot (10)^2$ $= 100\pi \text{ units}^2$	$A = \pi \bullet (radius)^2$

#21-26: Determine the area.

21.

8 cm

11 cm

22.

6 yd

23.

4 m

9 m

24.

5

3

4

25.

6 ft   6 ft

3.8 ft

26. ***CHALLENGE***

$2x - 3$

$3x + 5$
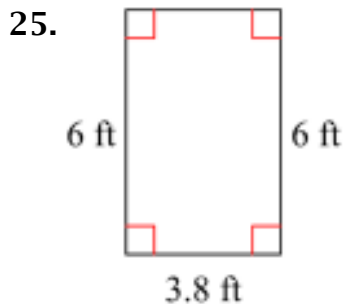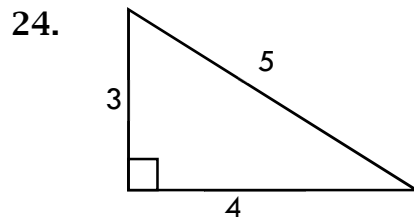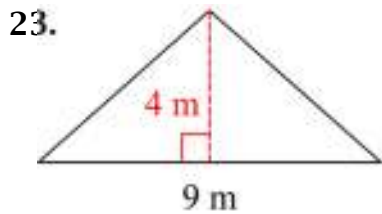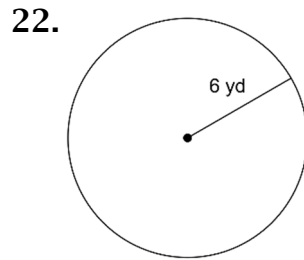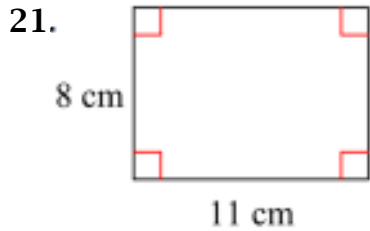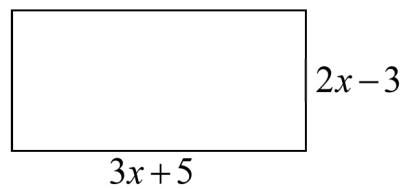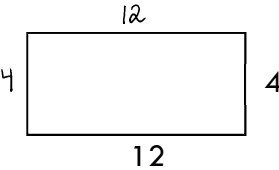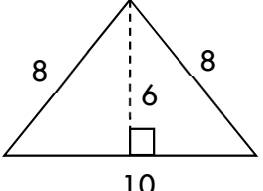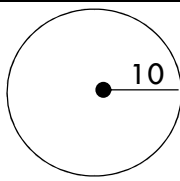
Learning Target #8: I can determine the perimeter of a quadrilateral and a circle.

Type	Examples		
Perimeter Add up the sides of the figure.	12 4 ▭ 4 12 $P = 4 + 12 + 4 + 12$ $= \underline{16 + 4} + 12$ $= 20 + 12$ $= 32 \text{ units}$	8 △ 8 6 10 $P = 8 + 8 + 10$ $= \underline{16 + 10}$ $= 26 \text{ units}$	◯ 10 $C = 2 \bullet \pi \bullet radius$ $C = 2 \cdot \pi \cdot 10$ $= 20\pi \text{ units}$

#27-32: Determine the perimeter.

27.

5.7 ft

8 ft

28.

3 mi

29.

5

3

4

30.

10   10

10

31. ***CHALLENGE***

$3x+4$ $3x+5$

$7x$

$10x+3$

32. ***CHALLENGE***

$4x-1$
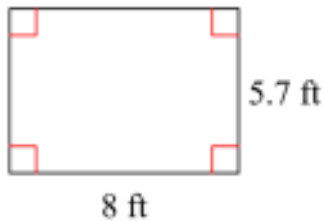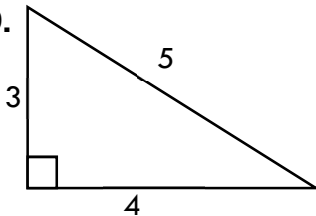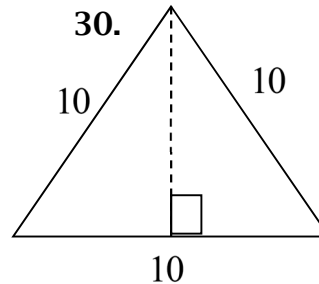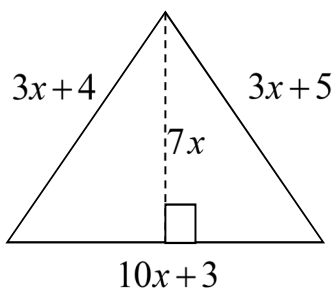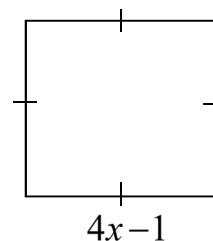
Learning Target #9: I can name a line segment.

#33: Name the line segment.

33a. To name a line segment, you must state two points on the ends of the line. The order of points does not matter
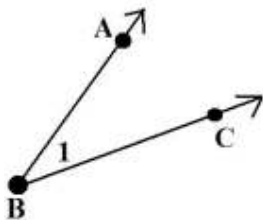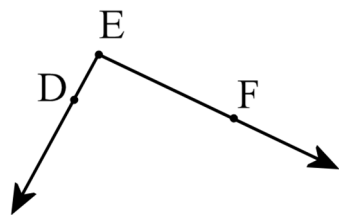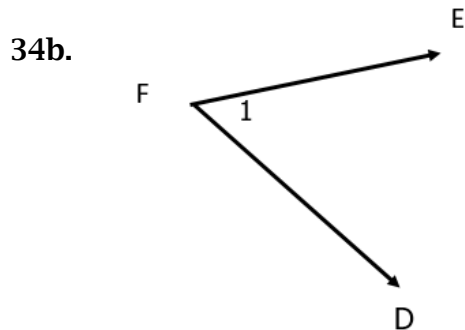
A ———•——— B ———•——— C

Name: $\overline{AC}$ or $\overline{CA}$

33b. J •———————————•——•———• M
                          K   L

33c. C •———•———•———• F
              D   E

Learning Target #10: I can name an angle.

#34: Name each angle in two ways.

34a. There are 4 ways to name an angle.

Name: ∡ABC
      ∡CBA
      ∡1
      ∡B

Name: ∡DEF
      ∡FED
      ∡E

34b.

34c.
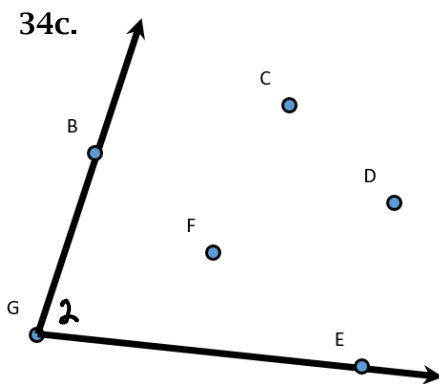
Geometry
Summer Packet_ANSWER KEY

| 1b. | 7 | 2b. | -33 | 3b. | -41 | 4b. | 16 | 5b. | -1 |

| 6b. | -5 | 7b. | 22 | 8b. | -2 | 9b. | -6 | 10b. | $-\dfrac{3}{2}$ |

| 11b. | $\dfrac{3}{2}$ | 12b. | 12.5 | 13b. | 9.5 | 14b. | 18 | 14c. | 8 |

15b.

16b.

16c.

17b.

18b.

18c.

19b

20b.

| 21. | $88cm^2$ | 22. | $36\pi yd^2$ | 23. | $18m^2$ | 24. | $6u^2$ |
| 25. | $22.8\,ft^2$ | 26. | $6x^2 + x - 15$ | 27. | $27.4\,ft$ | | 28. $6\pi mi$ |

| 29. | $12u$ | 30. | $30u$ | 31. | $16x + 12$ | 32. | $16x - 4$ |

33b. $\overline{JM}$, $\overline{MJ}$ 33c. $\overline{CF}$, $\overline{FC}$

34b.
∡1
∡F
∡DEF
∡FED

34c.
∡2
∡G
∡BGE
∡EGB