

Algebra 1

Siuslaw High School

Note to Students: In this packet, you will find two weeks worth of activities to complete during this time.

First, let's review functions:

For each input, there is exactly one output. We can visually tell it is a function by using the vertical line test.

Also, for a table of values:

The values in the left column are x 's, or domain.

x	y

The values in the right column are y 's, or range.

Review: Independent and Dependent Values.

- 1) The domain values are also referred to as independent values.
- 2) The range values are also referred to as dependent values of a function equation, because the value of y or $f(x)$ depends on the value of x .
- 3) Independent values (x -values, domain) are graphed on the X -axis or horizontal axis. Dependent values (y -values, range) are graphed on y -axis or vertical axis.

Practice: For each, identify independent and dependent variables.

1) $g(x) = -3x^2 + 2$

2) $s(t) = 2^t - 3$

3) $-2x^2 - 3x + 4 = f(x)$

4) $f(x) = 4^{x-3}$

explain we did g(x) as dependent before, but f(x) is sometimes this answer

Independent	Dependent
1) x	$-3x^2 + 2$
2) t	$2^t - 3$
3) x	$-2x^2 - 3x + 4$
4) x	4^{x-3}
5) e	$\frac{1}{3}e^2 - 4$

5) $b(e) = \frac{1}{3}e^2 - 4$

Practice: Given the domain value, find $f(x)$ or $g(x)$, the range. (Substitute the value given for x , in for x in the function to find what $f(x)$ equals)

$$1) f(x) = 3x^2 - 6x - 5; x = 5$$
$$3 \cdot 5^2 - 6(5) - 5$$
$$3 \cdot 25 - 30 - 5$$
$$75 - 30 - 5$$
$$40$$

$$2) f(x) = \left(\frac{1}{2}\right)^x + 3; x = -3$$

$$\left(\frac{1}{2}\right)^{-3} + 3$$

$$8 + 3$$

$$11$$

$$3) f(x) = 6x^2 + 5x; x = -4$$
$$= 6(-4)^2 + 5(-4)$$
$$6 \cdot 16 + (-20)$$
$$96 - 20$$
$$76$$

$$4) g(x) = 2^x - 3; x = -4$$

$$2^{-4} - 3$$

$$\frac{1}{16} - 3$$

$$-2\frac{15}{16}$$

First, let's review functions:

For each input, there is exactly one _____. We can visually tell it is a function by using the _____ test.

Also, for a table of values:

The values in the left column are _____, or _____.

The values in the right column are _____, or _____.

Review: Independent and Dependent Values.

- 1) The domain values are also referred to as _____ values.
- 2) The range values are also referred to as _____ values of a function equation, because the value of y or $f(x)$ _____ on the value of x .
- 3) Independent values (_____) are graphed on the _____ or _____ axis. Dependent values (_____) are graphed on _____ or _____ axis.

Practice: For each, identify independent and dependent variables.

1) $g(x) = -3x^2 + 2$

2) $s(t) = 2^t - 3$

3) $-2x^2 - 3x + 4 = f(x)$

4) $f(x) = 4^{x-3}$

5) $b(e) = \frac{1}{3}e^2 - 4$

Independent	Dependent
1)	
2)	
3)	
4)	
5)	

Practice: Given the domain value, find $f(x)$ or $g(x)$, the range. (Substitute the value given for x , in for x in the function to find what $f(x)$ equals)

$$1) f(x) = 3x^2 - 6x - 5; \quad x = 5$$

$$2) f(x) = \left(\frac{1}{2}\right)^x + 3; \quad x = -3$$

$$3) f(x) = 6x^2 + 5x; \quad x = -4$$

$$4) g(x) = 2^x - 3; \quad x = -4$$

I. For each, identify independent and dependent variables.

1) $h(x) = -5x^2 + 3$

2) $w(v) = 3^v - 7$

3) $-3x^2 + 1 = f(x)$

4) $g(x) = 3x^2 - 4x + 6$

5) $f(e) = -3^e - 5$

6) $s(t) = 12t^2$

7) $m(n) = 5 - 2^n$

8) $-k^2 + 2 = j(k)$

Independent	Dependent
1)	
2)	
3)	
4)	
5)	
6)	
7)	
8)	

II. Given a domain value, find $f(x)$, $g(x)$ or $h(x)$.

1) $g(x) = -3x^2 - 4$; $g(-5)$

2) $f(x) = -3x^2 - 6x - 8$; $f(-2)$

3) $h(x) = \frac{1}{2}x^2 - 5$; $h(6)$

4) $g(x) = \frac{3}{2}x^2 + 6x + 2$; $g(4)$

5) $f(x) = \frac{1}{2}x^2 - 12x + 11$; $f(-4)$

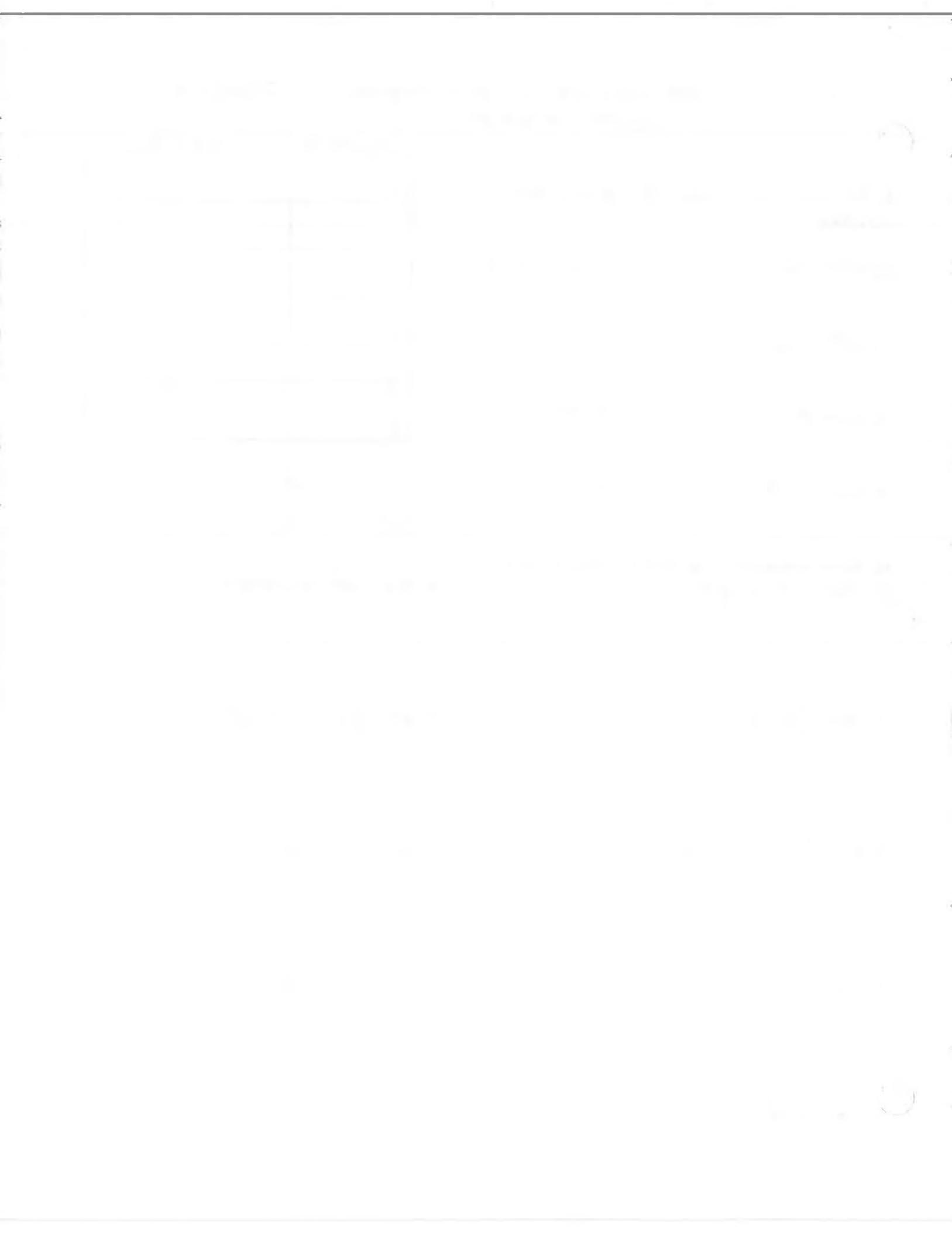
6) $g(x) = -\frac{1}{3}x^2 - 8$; $g(3)$

7) $h(x) = \frac{2}{3}x^2 + 8x + 5$; $h(-3)$

8) $h(x) = -\frac{1}{2}x^2 + 3$; $h(-4)$

9) $g(x) = -0.2x^2 - 5x + 2$; $g(5)$

10) $f(x) = 0.6x^2 + 6x - 5$; $f(-10)$



Standard 2.8 Review Basic Geometry and Factoring

Date _____

Kef

ALGEBRA

I Perimeter + Circumference

A Perimeter of squares, rectangles, and pentagons.

Directions: find the perimeter of each.

Don't Forget units!

Square Sides of:

- 1) 5 in.
- 2) $2\frac{1}{2}$ ft.
- 3) 3.2 cm

Rectangle length width

- 4) 9 in.
- 5) $7\frac{1}{2}$ ft.

Pentagon (5 sides)

- 6) 6", 8", 7", 4", 2"
- 7) 9.1', 2.6', 4', 3', 5.2'

$$1) \begin{aligned} 5 \times 4 &= 20 \text{ inches} \\ \text{or} \\ 5+5+5+5 &= 20 \text{ inches} \end{aligned}$$

$$\begin{aligned} 4) & 9 \times 2 + 4 \times 2 = \\ & 18 + 8 = \\ \text{or} & 9+9+4+4 = \\ & 26 \text{ inches} \end{aligned}$$

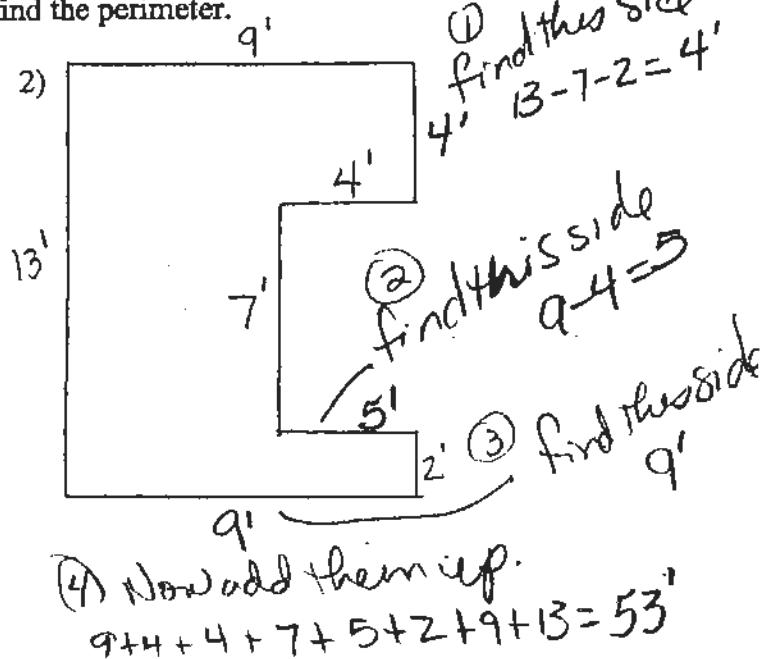
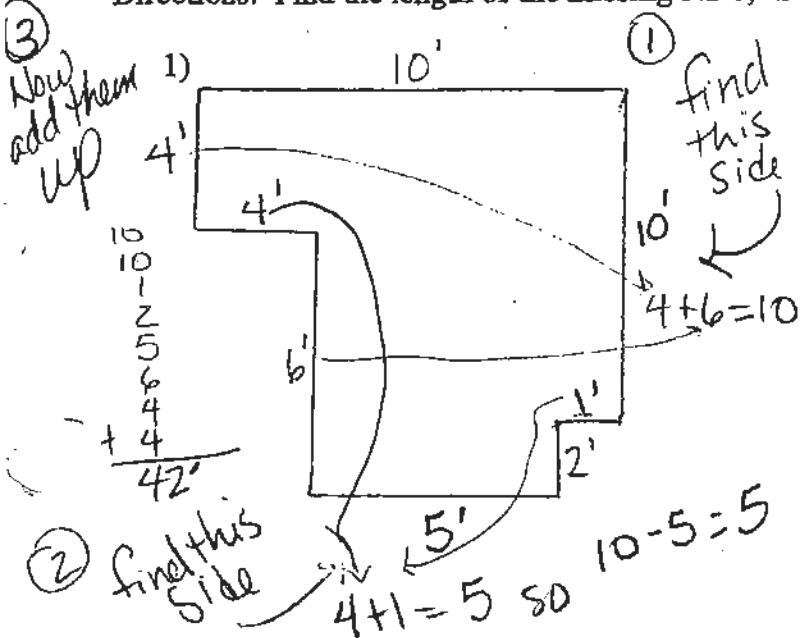
$$\begin{aligned} 5) & 7\frac{1}{2} \times 2 + 2\frac{1}{2} \times 2 = \\ & 15 + 5 = \\ & 20 \text{ ft} \\ \text{or} & 7\frac{1}{2} + 7\frac{1}{2} + 2\frac{1}{2} + 2\frac{1}{2} = \\ & 20 \text{ ft} \end{aligned}$$

$$6) \begin{aligned} 6+8+7+4+2 &= 27" \\ & = 27 \text{ ft} \end{aligned}$$

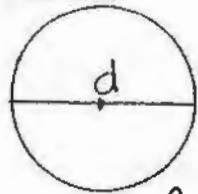
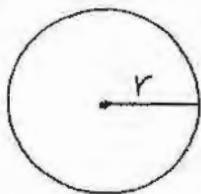
$$\begin{aligned} 7) & 9.1 \\ & 2.6 \\ & 4.0 \\ & 3.0 \\ & + 5.2 \\ \hline & 23.9' \end{aligned}$$

B. Perimeter, Missing Sides

Directions: Find the length of the missing sides, then find the perimeter.



C Circumference of Circles



r means radius
d means diameter

Circumference formulas:

$$C = 2\pi r \text{ or } 2 \cdot \pi \cdot r \text{ or } 2 \cdot r \cdot \pi$$

$$C = \pi d \text{ or } d \cdot \pi$$

(1-4) Use $\pi = 3.14$.

1) $r = 5$

$$2 \cdot 3.14 \cdot 5 = \\ 31.4$$

3) $d = 8$

$$8 \cdot 3.14 = \\ 25.12$$

5) $r = 4$

$$2 \cdot \pi \cdot 4 = \\ 8\pi$$

7) $d = 11$

$$11 \cdot \pi = \\ 11\pi$$

2) $r = 8$

$$2 \cdot 3.14 \cdot 8 = \\ 50.24$$

4) $d = 9$

$$9 \cdot 3.14 = \\ 28.26$$

6) $r = 9$

$$2 \cdot \pi \cdot 9 = \\ 18\pi$$

8) $d = 40$

$$40 \cdot \pi = \\ 40\pi$$

II GREATEST COMMON FACTORS

List all pairs of factors for each number (Factor Table)

1) 40

1	40
2	20
4	10
5	8

2) 42

1	42
2	21
3	14
6	7

3) 45

1	45
3	15
5	9

Find the Greatest Common Factor (GCF) for each set of numbers (Use multiple Factor Tables)

4) 16, 24

16	24
1	16
2	8
4	4

5) 12, 20, 32

12	20	32
1	12	16
2	10	8

6) 24x, 32x, 40x

24x	32x	40x
1	24	1
2	12	20
3	8	10
4	6	5

Gcf = 8

GCF = 4

GCF = 8x

Add the "x" since it is with all three numbers.

A. Notes for Area

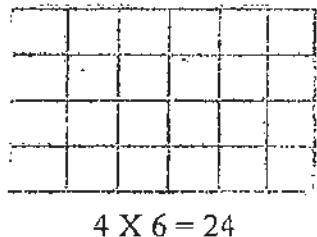
Date _____

When you find the Area you are finding the size of a figure.

The formula for the area of a square, a rectangle or a parallelogram is :

Area = base times height or $A = b \cdot h$

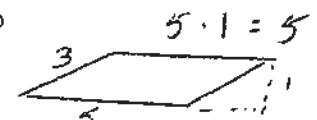
The area of a parallelogram depends on its height



$$5 \cdot 4 = 20$$



$$5 \cdot 3 = 15$$



$$5 \cdot 1 = 5$$

Note: When calculating area- the answer is ALWAYS given in square units eg: 2 ft^2 , 5 cm^2

Practice: Find the area of each figure with given dimensions

1) square with sides = 5 mm

$$5 \cdot 5 = 25 \text{ mm}^2$$

2) square with sides = 2.6 mm

$$2.6 \times 2.6 = 6.76 \text{ mm}^2$$

3) rectangle length = 15 ft, width = 3 ft

$$15 \cdot 3 = 45 \text{ ft}^2$$

4) rectangle width = 2 in, length = $1\frac{1}{2}$ in

$$2 \times 1.5 = 3 \text{ inches}^2$$

5) Parallelogram base = 3.2 cm height = 1.2 cm

$$3.2 \times 1.2 = 3.84 \text{ cm}^2$$

6) Parallelogram base = 8 miles, height = 4 miles

$$8 \times 4 = 32 \text{ miles}^2$$

B. Notes for Area of Triangles

Any triangle can be looked at as $\frac{1}{2}$ of a rectangle or a parallelogram. The formula for finding the area of a triangle is $A = \frac{1}{2} bh$ or Area equals $\frac{1}{2}$ times the base times the height.

$$A = \frac{bh}{2}$$

Practice: Find the area of each triangle

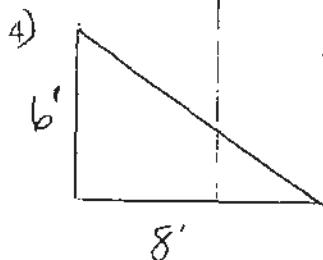
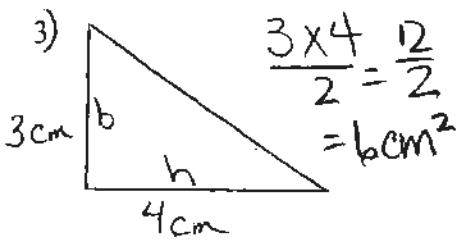
1) base = 4 cm height = 5 cm

$$A = \frac{4 \cdot 5}{2} = \frac{20}{2} = 10 \text{ cm}^2$$

2) base = 4.2 ft, height = 2.1 ft

$$\frac{4.2 \times 2.1}{2} = \frac{8.82}{2} = 4.41 \text{ ft}^2$$

If the triangle is a right triangle then the straight sides are the base and the height



C. Notes for Area of Circles

The formula for finding the area of a circle is $A = \pi r^2$
 $(r^2 = r \times r)$

Note: When calculating area- the answer is ALWAYS given in square units e.g: 2 ft^2 , 5 cm^2

Find the area of each circle.

Use π

1) $r = 3$
 $\pi \cdot 3^2$
 $\pi \cdot 9$
 $A = 9\pi$

Use $\pi = 3.14$

4) $r = 1$ $\pi \cdot 1^2 =$
 $1 \cdot 3.14$
 $A = 3.14$

2) $r = 6$

$\pi \cdot 6^2$
 $\pi \cdot 36$
 $A = 36\pi$

3) $r = 4.2$

$\pi \cdot 4.2^2$
 $\pi \cdot 17.64$
 $A = 17.64\pi$

When calculating the area of a circle given the diameter, you must divide the diameter by 2 to find the radius. Then apply the formula $A = \pi r^2$.

To find r you divide d by 2

Use π

7) $d = 10$ $r = 5$
 $5^2\pi$
 $A = 25\pi$

8) $d = 18$ $r = 9$
 $9^2\pi$
 $A = 81\pi$

9) $d = 6.2$ $r = 3.1$
 $3.1^2\pi$
 $A = 9.61\pi$

Use $\pi = 3.14$

10) $d = 20$ $r = 10$
 $10^2\pi$
 $100 \cdot 3.14$
 $A = 314$

11) $d = 2$ $r = 1$
 $1^2\pi$
 $1 \cdot 3.14$
 $A = 3.14$

12) $d = 8$ $r = 4$
 $4^2\pi$
 $16 \cdot 3.14$
 $A = 50.24$

IV

Notes for Volume

When you find the Volume you are finding the amount of space in a three-dimensional figure.

The formula for the area of a block is:

Volume = length times width times height or $V = l \cdot w \cdot h$

Note: When calculating volume- the answer is ALWAYS given in cube units e.g.: 2 ft^3 , 5 cm^3

Practice: Find the volume of each figure with given dimensions

1) Cube ; sides = 5 mm 2) cube ; sides = 2.6 mm 3) length = 15 ft, width = 3 ft, 4) length = 5 mm width = 2.2 ft

$5 \cdot 5 \cdot 5 =$
 125 mm^3

$2.6 \times 2.6 \times 2.6 =$
 17.576 mm^3

height = 2 ft
 $15 \cdot 3 \cdot 2 =$
 60 ft^3

height = 1.3 m
 $5 \times 2.2 \times 1.3 =$
 14.3 mm^3

Standard 2.8 Review Basic Geometry and Factoring

ALGEBRA

Date _____

I Perimeter + Circumference

A Perimeter of squares, rectangles, and pentagons.

Directions: find the perimeter of each.

Square

Sides of:

- 1) 5 in.
- 2) $2\frac{1}{2}$ ft.
- 3) 3.2 cm

1)

Rectangle

length width

- 4) 9 in. 4 in.
- 5) $7\frac{1}{2}$ ft. $2\frac{1}{2}$ ft.

2)

Pentagon

(5 sides)

- 6) 6", 8", 7", 4", 2"
- 7) 9.1', 2.6', 4', 3', 5.2'

3)

4)

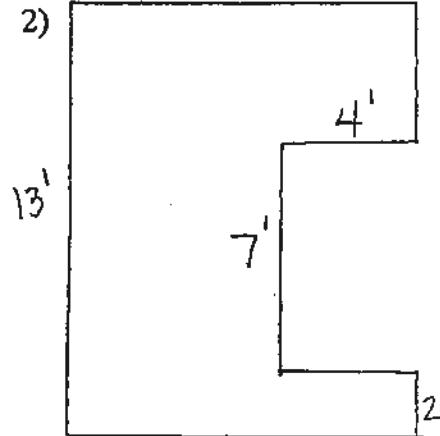
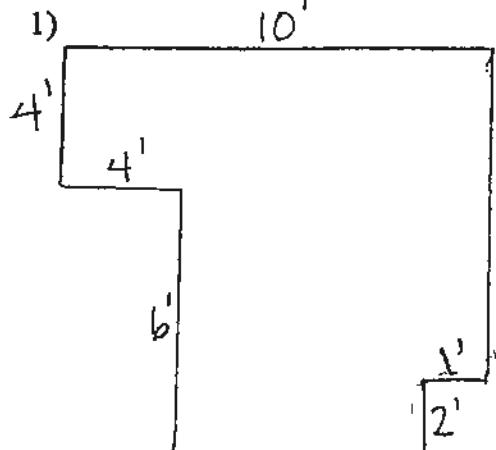
5)

6)

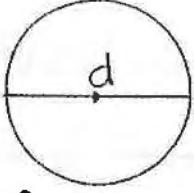
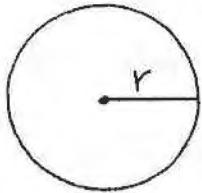
7)

B. Perimeter, Missing Sides

Directions: Find the length of the missing sides, then find the perimeter.



C. Circumference of Circles



r means radius
d means diameter

Circumference formulas:

$$C = 2\pi r \text{ or } \underline{\hspace{10cm}}$$

$$C = \pi d \text{ or } \underline{\hspace{10cm}}$$

(1-4) Use $\pi = 3.14$.

(5-8) Use the π symbol.

1) $r = 5$

3) $d = 8$

5) $r = 4$

7) $d = 11$

2) $r = 8$

4) $d = 9$

6) $r = 9$

8) $d = 40$

GREATEST COMMON FACTORS

List all pairs of factors for each number (Factor Table)

1) 40



2) 42



3) 45



Find the Greatest Common Factor (GCF) for each set of numbers (Use multiple Factor Tables)

4) 16, 24

5) 12, 20, 32

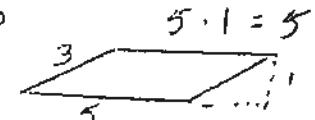
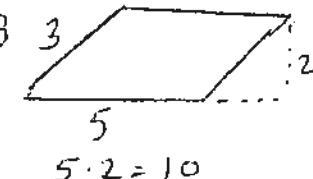
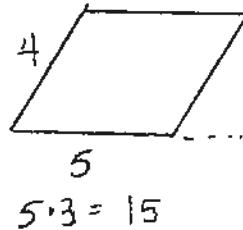
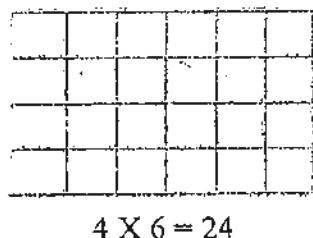
6) $24x, 32x, 40x$

When you find the **Area** you are finding the size of a figure.

The formula for the area of a square, a rectangle or a parallelogram is :

Area = base times height or $A = b \cdot h$

The area of a parallelogram depends on its height



Note: When calculating area- the answer is **ALWAYS** given in square units eg: 2 ft^2 , 5 cm^2

Practice: Find the area of each figure with given dimensions

1) square with sides = 5 mm

2) square with sides = 2.6 mm

3) rectangle length = 15 ft, width = 3 ft

4) rectangle width = 2 in, length = $1 \frac{1}{2}$ in

5) Parallelogram base = 32 cm height = 1.2 cm

6) Parallelogram base = 8 miles, height = 4 miles

B. Notes for Area of Triangles

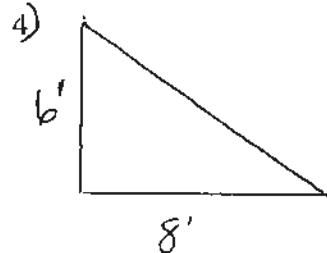
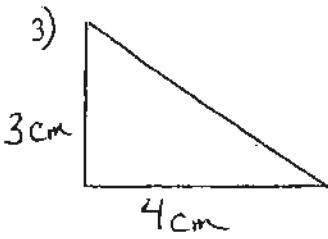
Any triangle can be looked at as $\frac{1}{2}$ of a rectangle or a parallelogram. The formula for finding the area of a triangle is $A = \frac{1}{2} bh$ or Area equals $\frac{1}{2}$ times the base times the height.

Practice: Find the area of each triangle

1) base = 4 cm height = 5 cm

2) base = 4.2 ft, height = 2.1 ft

If the triangle is a right triangle then the straight sides are the base and the height



C. Notes for Area of Circles

The formula for finding the area of a circle is $A = \pi r^2$
 $(r^2 = r \times r)$

Note: When calculating area- the answer is ALWAYS given in square units eg: 2 ft^2 , 5 cm^2

Find the area of each circle.

Use π

1) $r = 3$

2) $r = 6$

3) $r = 4.2$

Use $\pi = 3.14$

4) $r = 1$

5) $r = 4$

6) $r = 3$

When calculating the area of a circle given the diameter, you must divide the diameter by 2 to find the radius. Then apply the formula $A = \pi r^2$.

Use π

7) $d = 10$

8) $d = 18$

9) $d = 6.2$

Use $\pi = 3.14$

10) $d = 20$

11) $d = 2$

12) $d = 8$

IV

Notes for Volume

When you find the **Volume** you are finding the **amount of space** in a three-dimensional figure.

The formula for the area of a block is:

Volume = length times width times height or $V = l \cdot w \cdot h$

Note: When calculating volume- the answer is ALWAYS given in cube units e.g.: 2 ft^3 , 5 cm^3

Practice: Find the volume of each figure with given dimensions

- 1). Cube ; sides = 5 mm 2) cube ; sides = 2.6 mm 3) length = 15 ft, width = 3 ft, 4) length = 5 mm width = 2.2 ft
height = 2 ft height = 1.3 m

ALGEBRA

PERIMETER

Standard 8
Assignment

A. Find the perimeter of each.

Squares with sides of:

1. 4 ft
2. $3\frac{1}{2}$ ft
3. 2.2 cm
4. $2\frac{1}{4}$ ft

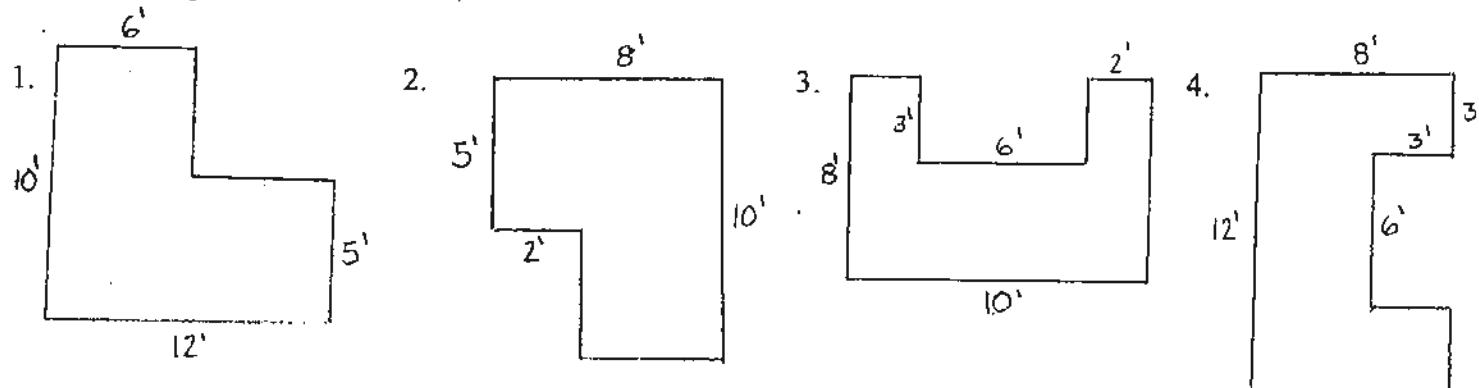
<u>Length</u>	<u>Width</u>
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5. 8 yd
6. 6 ft
7. 8.2 cm
8. $4\frac{1}{2}$ ft

Pentagons (5 sides)

9. 8', 6', 4', 3', 2'
10. 8.2', 4.1', 1.8', 2.6', 10'
11. 8.1", 4", 3.2", 6", 1"
12. $4\frac{1}{2}'$, $2\frac{1}{2}'$, 3', 4', $6\frac{1}{2}'$

B. Find the perimeter of each.



C. Find the circumference of each circle. $r = \text{radius}, d = \text{diameter}$

Use $\pi = 3.14$

1. $r = 4$
2. $r = 3$
3. $r = 10$
4. $r = 20$
5. $d = 10$
6. $d = 16$
7. $d = 30$
8. $d = 2$

Use the π symbol

9. $r = 2$
10. $r = 5$
11. $r = 10$
12. $r = 6$
13. $d = 6$
14. $d = 8$
15. $d = 30$
16. $d = 200$

II. Factoring

A. List all pairs of factors for each number (Factor Table).

1. 12
2. 20
3. 24
4. 36
5. 48
6. 56
7. 72

B. Find the Greatest Common Factor (GCF) for each set of numbers.

1. 24, 28
2. 15, 35
3. 36, 54
4. 21, 35
5. 24, 42
6. 12, 15, 21
7. 16, 32, 40
8. 27, 45, 63
9. 24, 64, 32
10. 12, 21, 45

ALGEBRA**III. AREA**

Standard 8
Assignment

A. Find the area of each figure with given dimensions.

SQUARES

1. side = 4 ft
2. side = 3 cm
3. side = 4.2 m
4. side = 5 in
5. side = 1.2 mm
6. side = 3 mi

RECTANGLES

length:	width:
7. 12 ft	6 ft
8. 8 m	3 m
9. 10 cm	4.5 cm
10. 6.2 cm	3.1 cm
11. 5 ft	2 1/2 ft

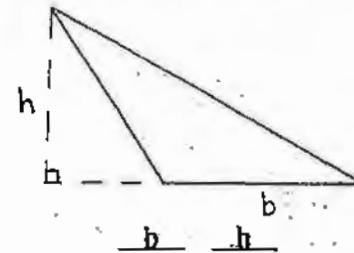
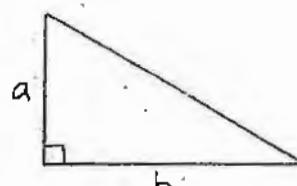
PARALLELOGRAMS

base:	height:
12. 8 ft	5 ft
13. 2 ft	12 ft
14. 6.4 cm	5 cm
15. 2.8 m	1.4 m
16. 6 ft	3 1/2 ft

B. Find the area of each triangle.

TRIANGLE

base:	height:
1. 10 m	6 m
2. 4.6 cm	5 cm
3. 6.2 m	3 m
4. 10 ft	2 1/2 ft
5. 40 ft	2 1/4 ft



C. Find the area of each circle. [r = radius; d = diameter]

Use π

1. $r = 4$
2. $r = 6$
3. $r = 3.2$
4. $r = 5$
5. $r = 4.1$

Use $\pi = 3.14$

6. $r = 10$
7. $r = 5$
8. $r = 6$
9. $r = 1.4$
10. $r = 3.1$

Use π

11. $d = 20$
12. $d = 16$
13. $d = 8$
14. $d = 4.2$
15. $d = 6.1$

Use $\pi = 3.14$

16. $d = 40$
17. $d = 20$
18. $d = 6$
19. $d = 8.2$
20. $d = 6.4$

IV. VOLUME

Find the volume of each block.

length width height

1. 10 ft 4 ft 6 ft
2. 20 cm 8 cm 2 cm
3. 10.4 ft 4 ft 2 ft
4. 8 m 4.4 m 2 m
5. 10 m 4.2 m 1.2 m

Cube with edge:

6. 6 ft
7. 8 ft
8. 4 m
9. 1.2 m
10. 1.1 cm