Geometry begins with lines and how lines relate to each other.

1. Match the name of the line to the definition and to the drawing.

a. ____ ____ vertical
b. ____ ____ parallel
c. ____ ____ horizontal
d. ____ ____ intersecting
e. ____ ____ perpendicular

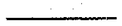
1. lines that cross each other
2. lines straight up and down
3. lines the same distance apart along their entire length
4. lines that form 90° angles where they meet
5. lines parallel to the horizon

6.
7. 
8. 
9. 
10. 

2. Match the name to the definition and to the drawing.

a. ____ ____ line
b. ____ ____ line segment
c. ____ ____ end point
d. ____ ____ ray
e. ____ ____ angle

1. has one end point
2. marks the beginning and ending
3. distance between two rays with a common end point
4. has no beginning and no end
5. has a beginning and end

6. 
7. 
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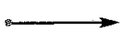
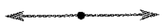
9. 
10.

3. Match the name of the angle to the definition and to the drawing.

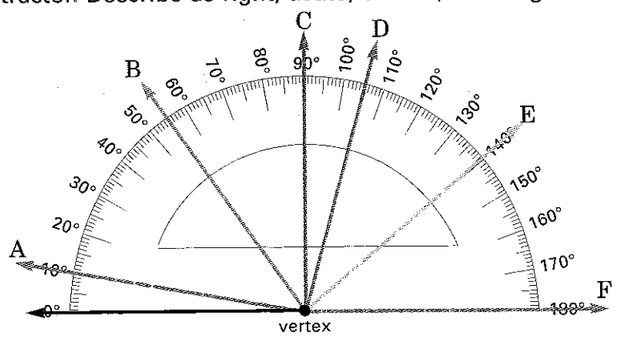
a. ____ ____ right
b. ____ ____ acute
c. ____ ____ obtuse
d. ____ ____ straight

1. equal to 180°
2. greater than 90°, but less than 180°
3. less than 90°
4. equal to 90°

5. 
6. 
7. 
8. 

4. Identify each measurement on the protractor. Describe as right, acute, obtuse, or straight.

A ____ ____
B ____ ____
C ____ ____
D ____ ____
E ____ ____
F ____ ____



Polygons are closed, plane shapes with three or more sides.

1. Name two of the plane shapes that are not polygons. _____ _____

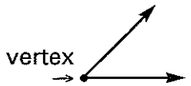
A **regular polygon** has sides of equal length and angles of equal measure.
Other polygons are **irregular polygons**.

2. Match irregular polygons to their names.

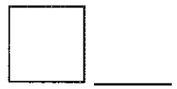
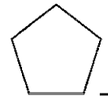
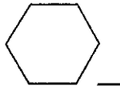
1. triangle
2. pentagon
3. hexagon
4. octagon

a.  _____
b.  _____
c.  _____
d.  _____

Vertex is the point where the rays of an angle meet.
Vertices is the plural of vertex.

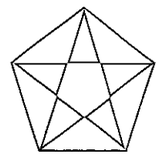


3. How many vertices in ....

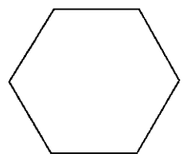
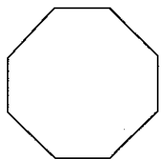
 ____
 ____
 ____
 ____
 ____

Diagonals are lines that join vertices.

4. The diagonals have been drawn between all of the vertices of the pentagon. Look carefully on the inside. Can you find a shape similar to the large shape? Outline it with your pencil. Name the shape. _____



5. Draw diagonals in each shape. Outline the small shape similar to the large shape. Name the shape.

 _____
 _____

Factors are all of the numbers that can be multiplied together for a certain product.
Factors are always written in number order.
Prime numbers are numbers that have only two factors, one and themselves.
Composite numbers are numbers with three or more factors.

(1.) Write the factors for each number in number order. Circle (P) for prime or (C) for composite.

a. 3 _____ (P, C) 4 _____ (P, C) 15 _____ (P, C)

b. 18 _____ (P, C) 23 _____ (P, C) 27 _____ (P, C)

c. 7 _____ (P, C) 24 _____ (P, C) 16 _____ (P, C)

d. 9 _____ (P, C) 5 _____ (P, C) 32 _____ (P, C)

Multiples are the answers to multiplication facts. The multiples of 6 are
Multiples are written in patterns. Multiply by 1, 2, 3, ... 6, 12, 18, 24, 36, ...
Multiples can be written to any size. 54, 60, 66, 72, 78, ...

Multiples can be written for any number (17). 17, 34, 51, 68, 85, ...

(2.) Write multiples of ...

a. 4 beginning with 20. ____ ____ ____ ____ ____ ____ ____ ____

b. 9 beginning with 45. ____ ____ ____ ____ ____ ____ ____ ____

c. 15 beginning with 15. ____ ____ ____ ____ ____ ____ ____ ____

(3.) Write all of the multiplication facts with the product of 18.

× 18	× 18	× 18	× 18	× 18	× 18

Factors are all of the numbers than can be multiplied together for a certain product.
Factors are always written in number order.

(4.) Write the factors of 18. ____ ____ ____ ____ ____ ____

Prime numbers are numbers that have only two factors, one and themselves.
Composite numbers are numbers with three or more factors.

(5.) Write the factors for each number. Circle (P) for prime or (C) for composite.

a. 5 _____ (P, C) 20 _____ (P, C)

b. 14 _____ (P, C) 23 _____ (P, C)

c. 30 _____ (P, C) 15 _____ (P, C)

d. 27 _____ (P, C) 29 _____ (P, C)

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There is another operation symbol for multiplication.
A small number (2) is written above and to the right of a number (3). 3^2
The symbol tells us to use 3 as a factor 2 times.
We can write the prime factors of 18 as ... $2 \times 3^2 = 18$

The name of this type of operation symbol is **exponential notation**.
The number (3) is the **base factor**. The small number (2) is the **exponent**.

3^2	is read "three to the second power or three squared."	$3 \times 3 = 9$
3^3	is read "three to the third power or three cubed."	$3 \times 3 \times 3 = 27$
3^4	is read "three to the fourth power."	$3 \times 3 \times 3 \times 3 = 81$
3^5	is read "three to the fifth power."	$3 \times 3 \times 3 \times 3 \times 3 = 243$

The pattern may continue to any power.
We say the number (3) is increasing exponentially.

The *base factor* is 7. The *exponent* is 2. 7×7
Write the number in *exponential notation*. 7^2
The *product* of 7 squared is 49. 49

(1.) Fill in the blanks for each set of prime factors.

		Base Factor	Exponent	Exponential Notation	Product
a.	$2 \times 2 \times 2 \times 2$	_____	_____	_____	_____
b.	$5 \times 5 \times 5$	_____	_____	_____	_____
c.	$3 \times 3 \times 3 \times 3$	_____	_____	_____	_____
d.	$7 \times 7 \times 7$	_____	_____	_____	_____
e.	$2 \times 2 \times 2 \times 2 \times 2$	_____	_____	_____	_____

Exponential notation is a way of expressing multiplication.
6 is the base number. 3 is the exponent. The operation is multiplication.
6 is multiplied by itself 3 times. 6 is called the repeated factor. $6^3 = 6 \times 6 \times 6 = 216$

(2.) Write the value of the number.

4^3 _____ 9^2 _____ 2^6 _____ 5^4 _____ 3^5 _____

Numbers can be expressed in exponential notation.

4 is the base number (factor). 5 is the exponent. The operation is multiplication. 4 is multiplied by itself 5 times.
4 is called a repeated factor. $4^5 = 4 \times 4 \times 4 \times 4 \times 4 = 1{,}024$

(3.) Write the value of the number.

3^4 _____ 7^2 _____ 5^3 _____ 2^5 _____ 0^5 _____