1

$$x + y = 75$$

The equation above relates the number of minutes, x, Maria spends running each day and the number of minutes, y, she spends biking each day. In the equation, what does the number 75 represent?

A) The number of minutes spent running each day

B) The number of minutes spent biking each day

C) The total number of minutes spent running and biking each day

D) The number of minutes spent biking for each minute spent running

2

Which of the following is equivalent to $3(x + 5) - 6$?

A) $3x - 3$

B) $3x - 1$

C) $3x + 9$

D) $15x - 6$

$3X+15-6$

$3X+9$

3

$x = y - 3$

$\frac{x}{2} + 2y = 6$

Which ordered pair (x, y) satisfies the system of equations shown above?

A) $(-3, 0)$

B) $(0, 3)$

C) $(6, -3)$

D) $(36, -6)$

$X-Y=-3$

$\frac{1}{2}X+2Y=6$

$2X-2Y=-6$

$+\ \frac{1}{2}X+2Y=6$

$2.5X=0$

$X=0$

4

Which of the following complex numbers is equal to $(5 + 12i) - (9i^2 - 6i)$, for $i = \sqrt{-1}$?

A) $-14 - 18i$

B) $-4 - 6i$

C) $4 + 6i$

D) $14 + 18i$

$i^2=-1$

$5+12i-9i+6i$

$5+12i+9+6i$

$18i+14$

5

If $f(x) = \dfrac{x^2 - 6x + 3}{x - 1}$, what is $f(-1)$?

A) −5

B) −2

C) 2

D) 5

$f(-1) = \dfrac{(-1)^2 - 6(-1) + 3}{-1-1}$

$= \dfrac{1 + 6 + 3}{-2} = \dfrac{10}{-2}$

$= -2$

6

A company that makes wildlife videos purchases camera equipment for $32,400. The equipment depreciates in value at a constant rate for 12 years, after which it is considered to have no monetary value. How much is the camera equipment worth 4 years after it is purchased?

A) $10,800

B) $16,200

C) $21,600

D) $29,700

$32400 - Xt$ ← time

$ every year

$32400 - 12X = 0$

$32400 = 12X$

$X = 2700$

$32400 - 2700(4)$

21600

2700×4

7

$x^2 + 6x + 4$

Which of the following is equivalent to the expression above?

A) $(x+3)^2 + 5$

B) $(x+3)^2 - 5$

C) $(x-3)^2 + 5$

D) $(x-3)^2 - 5$

$x^2 + 6x + 9 - 5$

$x^2 + 6x + 9$

8

$80

Ken is working this summer as part of a crew on a farm. He earned $8 per hour for the first 10 hours he worked this week. Because of his performance, his crew leader raised his salary to $10 per hour for the rest of the week. Ken saves 90% of his earnings from each week. What is the least number of hours he must work the rest of the week to save at least $270 for the week?

A) 38

B) 33

C) 22

D) 16

$0.9(10X + 80) \geq 270$

$9X + 72 \geq 270$

$9X \geq 198$

$X \geq 22$

1. Look around your school or house. What are some structures you see that use triangles?

Roof of your house

2. Why is the triangle the shape of choice for structures such as bridges and the Eiffel Tower?

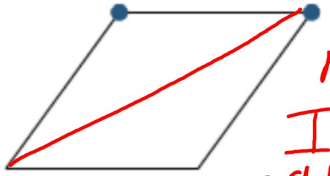
Rigid

Triangles are the only polygons that are rigid.

3. What does it mean for a triangle to be rigid?

A figure is rigid if it cannot be distorted under stress.

4. Is the figure below a rigid figure? If not, what can you do to make it rigid?



This quad. is not rigid.

In order to make it rigid, draw a diagnol to form two rigid As.

5. Do you remember what makes each of the following triangles special?

a. Isosceles triangle — 2 ≅ sides

b. Equilateral triangle — all sides ≅

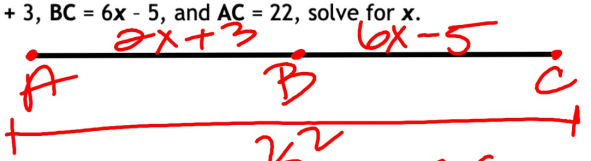
c. Scalene triangle — none of sides ≅.

d. Right triangle — one angle that = 90°

e. Acute triangle — all angles measure < 90°

f. Obtuse triangle — one angle is > 90°

6. **REVIEW** Suppose points **A**, **B**, and **C** are collinear, where **B** is between **A** and **C**. If **AB** = 2*x* + 3, **BC** = 6*x* − 5, and **AC** = 22, solve for *x*.



$AB + BC = AC$

$2x+3+6x-5=22$

$8x-2=22$

$8x=24$ $x=3$

Properties of a triangle

Student Activity Sheet 2; *Exploring* "A triangle, or not?" Page 1 of 2

1. Write a good definition of a triangle

a figure (or a polygon) closed w/ three sides

2. It is possible to create a triangle with side lengths 6 units, 6 units, and 2 units. Decide whether the other combinations of side lengths in the table create triangles or not. Mark your answers in the table.

Side lengths (in units)	Forms a triangle?	
	YES	NO
6,6,2	X	
4,6,8		
8,9,2		
4,2,8		
6,8,9		
6,4,4		
2,4,6		
4,4,9		
2,8,8		

3. Explain why some of the side length combinations in the table above do not form triangles.

If the sum of two sides of a figure is less than the the third side, then there is no way the two shorter sides can meet to form a Δ.

4. Write a conjecture about the relationship among the lengths of the sides of a triangle. This conjecture can be proven, so we will call this the Triangle Inequality Theorem. You will prove this conjecture in a later topic.

The sum of the lengths of any two sides of a Δ is greater than the length of the third side

2 4 6

6 > 6

4 + 6 > 2

4 + 2 ≠ 8

A + B > C
B + C > A
A + C > B
} must be satisfied

5. **REINFORCE** The lengths of two sides of a triangle are 7 cm and 10 cm. What are the upper and lower bounds on the third side of the triangle?

5 = third side

5 + 7 > 10

5 > 3

7 + 10 > 5

17 > 5

3 < 5 < 17

6. **REINFORCE** $\overline{MO}$ is twice as long as $\overline{MN}$. **NO** = 36 cm. Find **MO** and **MN**. Can you solve this problem? If so, give the solution. If not, explain why not.

We don't know if is O, M, or N

7. **REINFORCE** $\overline{MO}$ is twice as long as $\overline{MN}$. **NO** = 36 cm. What lengths must **NM** be between in order for ΔMNO to be formed?

$12 < NM < 36$ $X = NM$

X

$NM + MO > NO$

$X + 2X > 36$

$3X > 36$

$X > 12$

Hwk #24 - Classifying Triangles Worksheet