Math 2 Midterm Review Sheet   Name:_____

Unless the question asks for the exact answer, round your answer to the nearest hundredth.
1.) Write the equation of a quadratic function in vertex form that has the following properties:
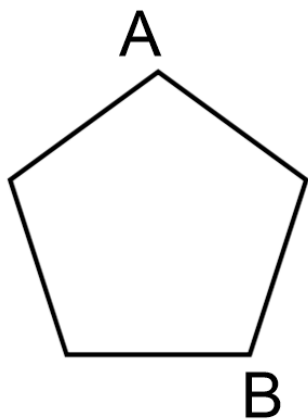 Vertex (1, 13) and point (7, -5)

_____

2.) A point is rotated 270 degrees, reflected over the line y=6, translated up 3 units and left 7, then finally reflected over the line y=x. If the pre-image of the point is (-2, 4), what is the image of the point?
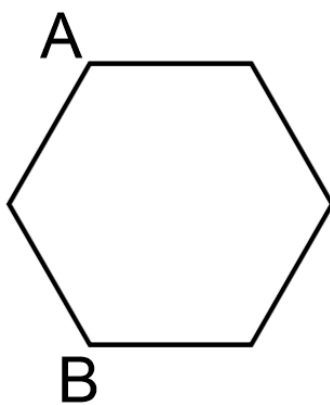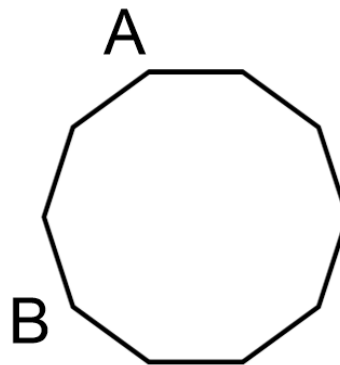
_____

3.)
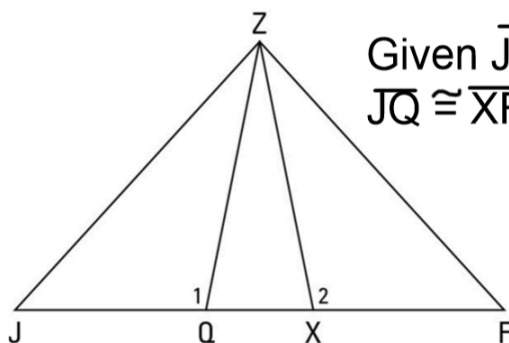
Given $\overline{JZ} \cong \overline{FZ}$ &
$\overline{JQ} \cong \overline{XF}$ Prove $\angle 1 \cong \angle 2$

4.) How many degrees counterclockwise would you need to map the figure onto itself from point A to point B?


_____   _____   _____

5.) Find the exact roots: $f(x) = 3x^2 + x + 7$ _____

6.) C''' is (-3, 8). If this is the image of C after it has been translated 4 right and 2 down, and rotated 90° clockwise, reflected over the line y= -x, what are the original coordinates of C?

_____

7.) The towers of a suspension bridge are 600 feet apart and rise 410 feet higher than the road. Suppose that the cable between the towers has the shape of a parabola and is 5 feet higher than the road at the point halfway between the towers. What is the approximate height of the cable 150 feet from the center?

_____

8.) Standing 5 ft tall on a 200 foot cliff, you see a basset frolicking at an angle of depression of 14º. After about 27 minutes, you see it now at an angle of depression of 46º because it moved closer to the cliff. How fast is the basset going? Round you answer to the nearest hundredth of a ft/min.

_____

9.) Solve for x and y given that the two lines connected by the transversal are parallel.

X:_____

5y

Y:_____

10x-15
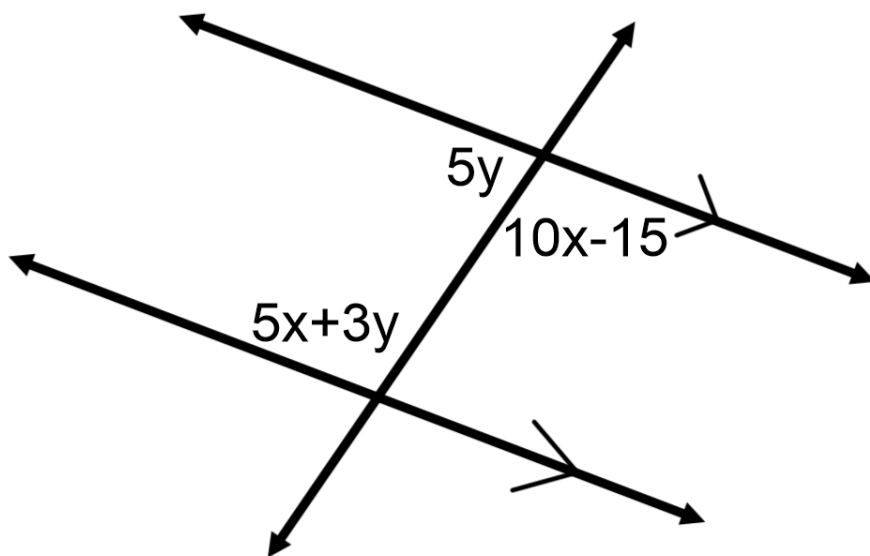
5x+3y

10.) A large pigeon sees a cat at an angle of depression 40º. Seeing its prey, it swoops _____

down to try and carry it away to its nest. If the pigeon is 60 feet off the ground,

how far will the pigeon have to fly until it gets to the cat? Nearest hundredth

11.) An iron weight has a density of 7.874 g/cm^3. The weight is made out of a cone attached to a cylinder so that they share the same radius. The height of the cone is half the height of cylinder. The height of the cylinder is three times the radius of the cylinder. If the cylinder has a diameter of 12 cm, what is the mass of the weight?

_____

12.) Triangle ABC is made with coordinates (8, 15), (5, 19), (0, 31).
A.) If the dilation of factor .75 about the origin, what are the coordinates of the image?
B.) What is the perimeter of image? Round to the nearest hundredth.
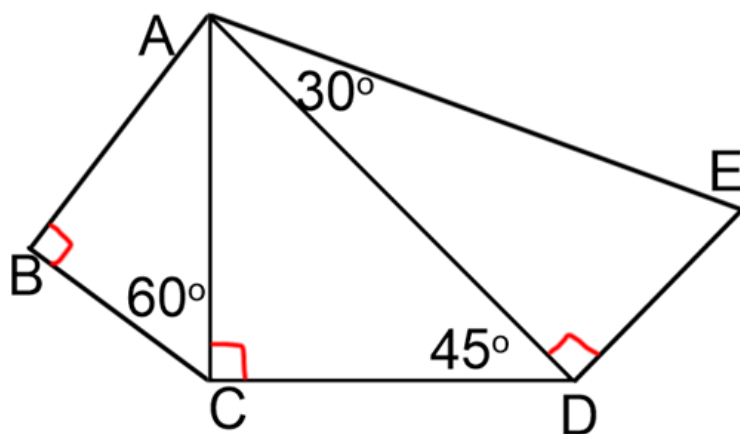
A.) _____

B.) _____

13.) The bowl of a satellite dish can be modeled by a quadratic function where x is the horizontal distance across the dish and y is the height o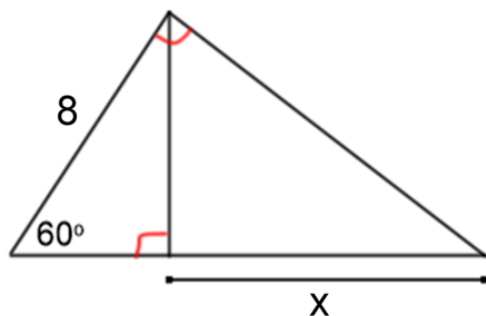f the dish off the ground. The equation for the dish is y= $0.06x^2 - 3x + 100$. When is the dish at less than 80 feet off the ground? Express your answer as an inequality.

_____

14.) Given $\overline{AB} = 9\sqrt{3}$ find $\overline{DE}$. $\overline{DE} =$_____
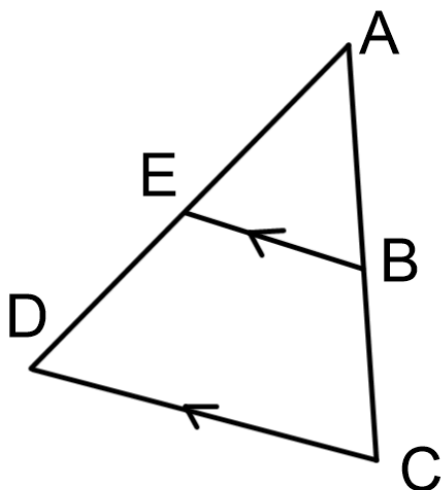

15.) Solve for x   _____

16.) Write a quadratic equation in vertex form that from the parent function f(x)=x^2 has been reflected across the x-axis, stretched vertically by a factor of 4, shifted 8 right, and 3 down.

_____

A

E

B

D

C

17.)   E and B are midpoints of segment AD and AC. If EB=3x+2 and DC=8x-4. What is the length of DC?

_____

18.) Create the quadratic equation in standard form from the table below.

x	-8	-6	-4	2
y	-5	-11	-13	5

19.) A water tank has a hemi-sphere attached to a cylinder attached to a cone. They all share the same radius. The height of the cone is double the radius, and the height of the cylinder is double the height of the cone. The radius of the hemisphere is 6 feet. The mass of the tank is 225832.76 lbs. What is the density of the water tank?

_____

20.) The outside of a silo is being painted. The silo is made of a cylinder and a hemisphere. The bottom of the cylinder is not painted because it is the floor of the silo. The radius of the silo is 14 feet, and the height of the cylinder is 40 feet. A gallon of paint covers 400 square feet. How many full gallons of paint will you need?

_____

21.) The sun is casting shadows on objects outside. A flagpole that is 20 feet tall casts a 12 foot shadow. How long of a shadow will you cast if you are 6 foot tall?
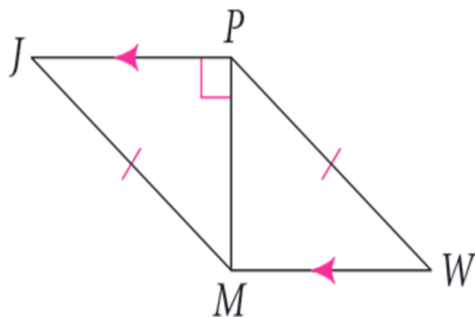
_____

Name:_____

22.) Solve for the missing side lengths.
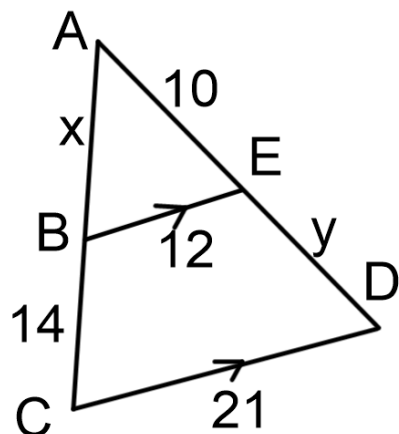
x: _____   & y:_____

23.) The midsegment of a triangle has a length equal to $5x + 6$ and the side parallel to it is has a length of $4x^2 + 16$. What is the longest possible length for the midsegment?
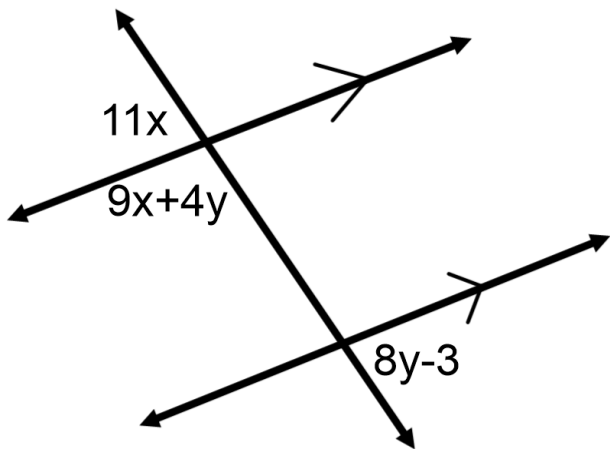
_____

Given: $\overline{JM} \cong \overline{WP}$
$\overline{JP} \perp \overline{PM}$
Prove $\overline{JP} \cong \overline{MW}$

24.)

25.) The function $f(x) = -3x^2 + 12x + 7$ is moved 5 right and 6 up to get the function g(x). What is the new function g(x) in vertex form?
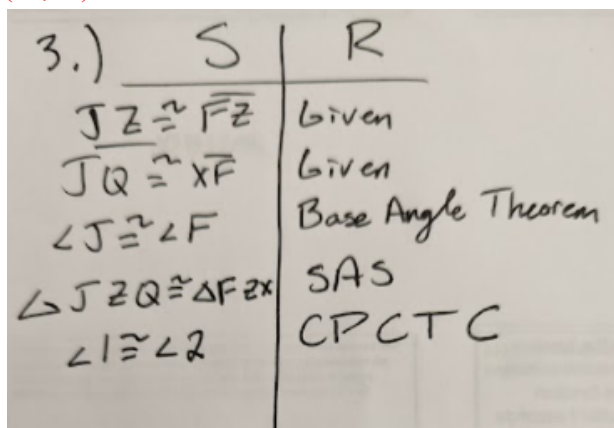
_____

26.) Solve for x and y: x:_____   y:_____

Math 2 Midterm Review Sheet   Name:_____

1.) $y = -\frac{1}{2}(x - 1)^2 + 13$

2.) (13, -3)

3.)

S	R
$\overline{JZ} \cong \overline{FZ}$	Given
$\overline{JQ} \cong \overline{XF}$	Given
$\angle J \cong \angle F$	Base Angle Theorem
$\triangle JZQ \cong \triangle FZX$	SAS
$\angle 1 \cong \angle 2$	CPCTC

3.)

4.) a.) 216   b.) 120   c.) 108

5.) $(\frac{-1 \pm i\sqrt{83}}{6}, 0)$

6.) (-7, -6)

7.) 106.25

8.) 23.12 ft/sec

9.) x=12, y=15

10.) 93.34 ft

11.) 18701.1 grams

12.) a.) (6, 45/4), (15/4, 57/4), (0, 93/4)   b.) 26.92

13.) 7.92<x<42.08

14.) $6\sqrt{6}$

15.) 12

16.) $y = -4(x - 8)^2 - 3$

17.) 28

18.) $y = 0.5x^2 + 4x - 5$

19.) 62.4 lb/ft^3

20.) 12 gallons

21.) 3.6 ft

22.) x=56/3 & y=7.5

23.) x=16

24.)

S	R
$\overline{JM} \cong \overline{WP}$	Given
$\overline{JP} \perp \overline{PM}$	Given
$\overline{JP} \parallel \overline{MW}$	Given
$\angle JPM = 90$	Def of Perp
$\angle JPM \cong \angle WMP$	Alt Int Angles
$90° = \angle WMP$	Transitive
$\overline{PM} \cong \overline{PM}$	Reflexive

S	R
$\triangle JPM \cong \triangle WMP$	HL
$\overline{JP} \cong \overline{MW}$	CPCTC

24.)

25.) $f(x) = -3(x-7)^2 + 25$

26.) x=7   y=10