8th Grade Remote Learning Non Digital Packet

Math:

Answer the following questions and show all work.

1. In a certain college, 40% of the senior class students are taking Physics, 30% are taking calculus and 10% are taking both. If 40 students are enrolled in the senior class, how many students are taking neither Physics nor calculus?
2. Joe drove at the speed of 45 miles per hour for a certain distance. He then drove at the speed of 55 miles per hour for the same distance. What is the average speed for the whole trip?
3. If the radius of a cylindrical container is doubled, how do you change the height of the container so that the volume will stay the same?
4. One leg of a right triangle is 18 cm and its area is 108 square cm. Find its perimeter.
5. What is the sum of the sizes of the interior angles of a polygon with 53 sides?
6. Jack is taller than Sarah but shorter than both Malika and Tania. Malika is shorter than Tania. Natasha is shorter than Sarah. Who is the shortest?
7. What is the height (one of the legs) and the hypotenuse of an isosceles right triangle that has an area of 800 square feet?
8. Find the circumference of a circle inscribed inside a square with a side of 20 meters.
9. Two different schools (A and B) have the same number of pupils. The ratio of the boys in school A and the boys in school B is 2:1 and the ratio of the girls in school A and the girls in school B is 4:5. Find the ratio of the boys in school A to the girls in school A.
10. A water tank has the shape of a rectangular prism of base 50 cm^2. This tank is being filled at the rate of 12 liters per minutes. Find the rate at which the height of the water in the water tank increases; express your answer in millimeters per second.
11. One pump fills a tank two times as fast as another pump. If the pumps work together they fill the tank in 18 minutes. How long does it take each pump working alone to fill the tank?

Math Task Project:

Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant. He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the gray shape over the vertical line.

Then reflect both of the shapes over the horizontal line.

This will make a design in all four quadrants.
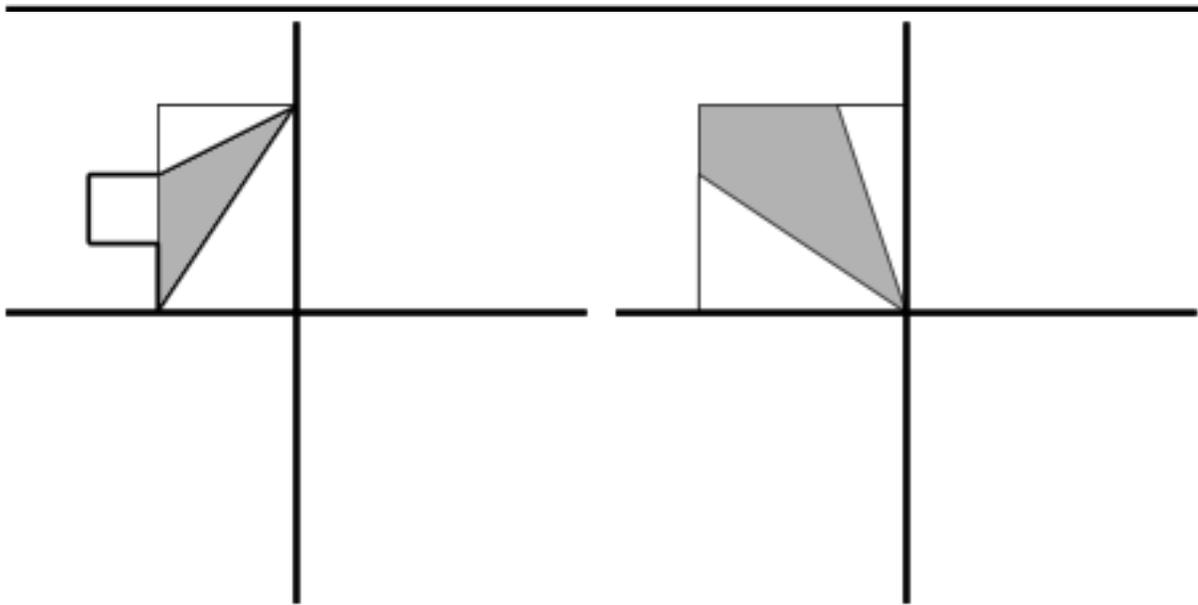
2. To finish drawing Aaron's second design, rotate the gray shape 1/4 of a turn in a clockwise direction about the origin. Then draw the second shape.

Rotate the second shape 1/4 of a turn in a clockwise direction about the origin. Then draw the third shape.

Rotate the third shape 1/4 of a turn in a clockwise direction about the origin. Then draw the fourth shape.

This will make a design in all four quadrants.
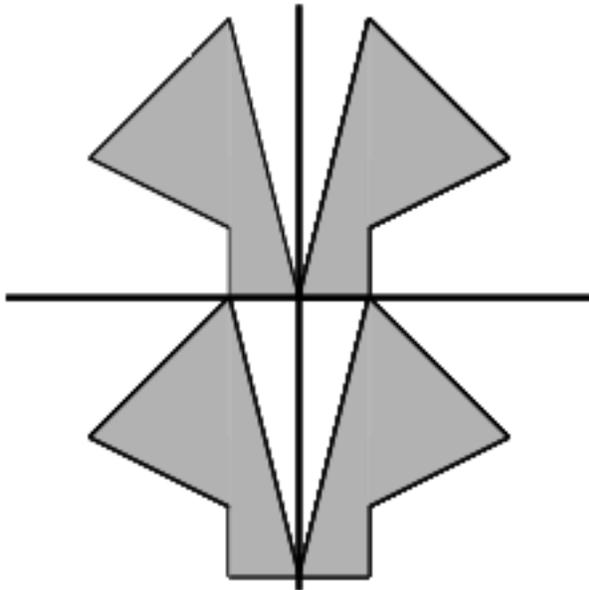
3. This is Aaron's third design.

He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

Science:

Making Invisible Ink Experiment:

Invisible Ink the Baking Soda Way

1. Mix about 1/4 cup (60 ml) of baking soda and 1/4 cup (60 ml) of water.

2. Next, write using a Q-tip, **toothpick** or brush on a piece of paper.
3. Let it dry completely.
4. To read the **secret message**, paint grape juice concentrate across the paper with a paint brush or a sponge. Don't forget - grape juice stains.

Why it works: Grape juice has an **acid** that reacts with the baking soda. A different color appears wherever the secret message is **written**

Exercise (Workout)

* Perform 5 full rounds of exercise, do a full round (1-5) with no rest and then rest 2 minutes between each round

1. **15 jumping jacks**
2. **10 squats**
3. **5 pushups**
4. **10 mountain climbers (5 each leg)**
5. **10 burpees**