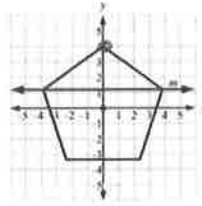


Geometry Milestone Test

Name Key S: _____

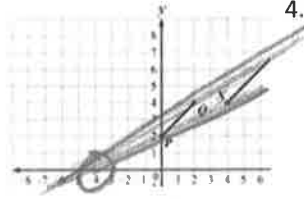
1. A regular pentagon is centered about the origin and has a vertex at (0, 4). Which transformation maps the pentagon onto itself?



$$\frac{360}{5} = 72$$

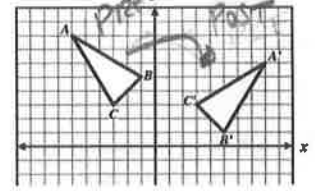
- A. a reflection across line m.
- B. a reflection across the x-axis.
- C. a clockwise rotation of 100° about the origin.
- D. a clockwise rotation of 144° about the origin.**

3. In the coordinate plane, segment \overline{PQ} is the result of a dilation of segment \overline{XY} by a scale factor of $\frac{1}{2}$. What is the point of dilation?



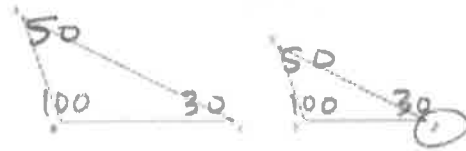
- A. (-4, 0)**
- B. (0, -4)
- C. (0, 4)
- D. (4, 0)

2. Triangle $A'B'C'$ in Q1 is:



- a. A translation of triangle ABC across the x-axis.
- b. A 270° rotation of triangle ABC about the origin.**
- c. A reflection of triangle ABC across the y-axis.
- d. A reflection of triangle ABC across the x-axis.

4. Triangle $\triangle ABC$ is dilated by a factor of $\frac{2}{3}$ to form $\triangle XYZ$. Given that $m\angle A = 50^\circ$ and $m\angle B = 100^\circ$, what is $m\angle Z$?



- A. 15°
- B. 25°
- C. 30°**
- D. 50°

5. What is the rule for a 90 degree counterclockwise rotation about the origin?

- A. $(-Y, X)$ 90**
- B. $(Y, -X)$ 270
- C. $(-X, -Y)$ 180
- D. $(X, -Y)$ x-axis

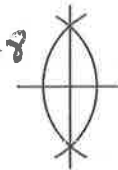
6. Point $(-4, 3)$ is reflected about the line $y = -5$. What is the new point?

- A. $(-6, 3)$
- B. $(-3, 3)$
- C. $(-4, 5)$
- D. $(-4, -13)$**

$$3 - (-5) = -8$$

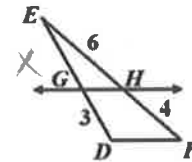
$$-5 - 8 = -13$$

7. This partially completed construction is of a ...



- A. Angle Bisector
- B. Tangent Line
- C. Parallel Lines through a point
- D. Perpendicular Bisector**

8. What is the length of \overline{EG} ?

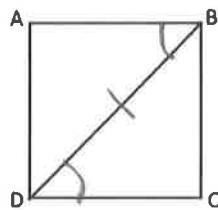


$$\frac{x}{3} = \frac{6}{4}$$

$$4x = 18$$

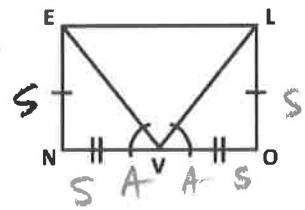
- A. 5.5
- B. 5
- C. 4.5**
- D. 4

9. ABCD is a square. Which two properties can't be used to prove $\triangle ABD \cong \triangle CDB$?



- A. Vertical angles** X
- B. Reflexive sides ✓
- C. Alternate Interior Angles ✓
- D. Corresponding angles** X

10. What congruency rule proves $\triangle ENV \cong \triangle LOV$?



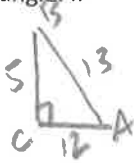
- A. SSA
- B. SAS
- C. HL
- D. Not possible**

SSA = not poss.

11. In a right $\triangle ABC$, C is the right angle. If

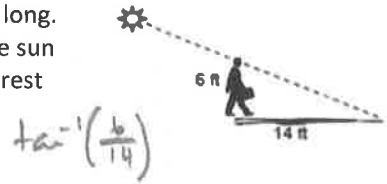
$\sin A = \frac{5}{13}$, what is $\cos A$?

- a. $\frac{5}{13}$ **b. $\frac{12}{13}$** c. $\frac{5}{12}$ d. $\frac{13}{5}$



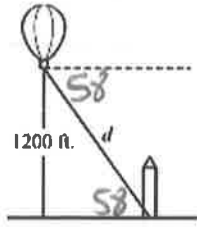
12. A 6 ft tall man casts a shadow 14 feet long. What is the angle of elevation that the sun ray makes with the ground to the nearest whole number?

- a. 19° b. 21° **c. 23°** d. 25°



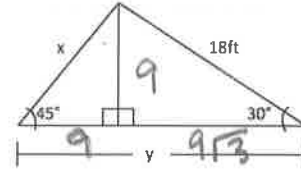
13. A hot air balloon is 1200 feet above the ground. The angle of depression from the basket to the base of a monument is 58 degrees. What is the distance, d, from the balloon to the base of the monument to two decimals?

- A. 1,017.66 ft B. 1,200 ft
C. 1,386.45 **D. 1,415.01 ft**



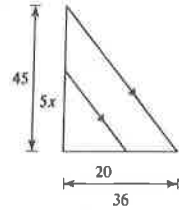
$\sin 58 = \frac{1200}{d}$
 $d = \frac{1200}{\sin 58}$

14. What is the length of Y?



- A. $9\sqrt{2}$ ft
B. $9\sqrt{3}$ ft
C. $9 + \sqrt{3}$ ft
D. $9 + 9\sqrt{3}$ ft

15. Find x.



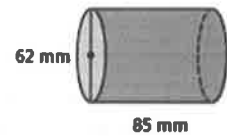
- A. 4 **B. 5**
C. 7 D. 8

$\frac{5x}{20} = \frac{45}{36}$
 $180x = 900$

16. Find the **volume** of the cylinder to the nearest tenth.

- A. 1,026,484.0 mm^3 **B. 256,621.0 mm^3**
C. 85,540.3 mm^3 D. 5,270 mm^3

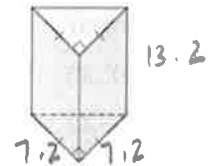
$\pi(31)^2 \cdot 85$



17. A triangular prism has an isosceles right triangle as a base. Each leg of the base is 7.2 cm long and the height of the prism is 13.2 cm. Find the **volume of the prism**.

- A. 342.1 cm^3** B. 646.8 cm^3
C. 684.3 cm^3 D. 228.1 cm^3

$\frac{7.2 \cdot 7.2}{2} \cdot 13.2$



18. What is the **radius** of a sphere with a volume of 8,181.2 cm^3 ?

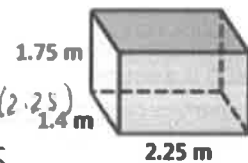
- A. 10 cm B. 11 cm C. 12 cm **D. 12.5 cm**

$\frac{3}{4} \left[\frac{8181.2}{\pi} = \frac{4}{3} \pi (r)^3 \right] \frac{3}{4}$
 $1953.11 = r^3$

19. Find the **volume** and **surface area** of the rectangular prism.

- A. 5.51 m^3 , 19.08 m^2 **B. 19.08 m^3 , 5.51 m^2**
C. 6.75 m^3 , 19.08 m^2 D. 19.08 m^2 , 6.75 m^3

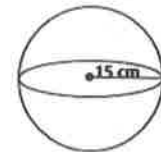
$1.75 \times 1.4 \times 2.25 = 5.51 \text{ m}^3$
 $2(1.4)(2.25) + 2(1.75)(1.4) + 2(1.75)(2.25)$
 $6.3 + 4.9 + 7.875$



20. Find the **volume** of each hemisphere. Round to the nearest hundredth.

- A. 14,137.17 cm^3 B. 15,255.10 cm^3
C. 7,627.55 cm^3 **D. 7,068.58 cm^3**

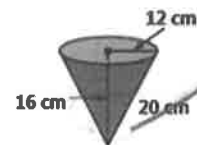
$\frac{2}{3} \pi (15)^3$



21. If a marble has a **volume** of 523.6 mm^3 , how many whole marbles can fit in the cone, ignoring empty space?

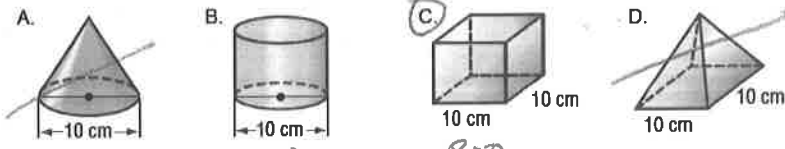
- A. 4,608 **B. 4,607** **46,08**
C. 3,299 D. 4,806

$\frac{\pi (12)^2 \cdot 16}{3} = \frac{2412.74}{52.36}$



$\text{Vol of Marble in cm}^3 = \frac{523.6}{10} = 52.36 \text{ cm}^3$

22. If each of the following solids has a height of 8 cm, which has the greatest volume?



$\pi(5)^2 \cdot 8$
628.32

800

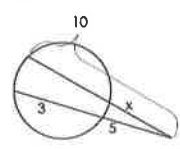
23. Find x.

A. 3

B. 4

C. 5

D. 6

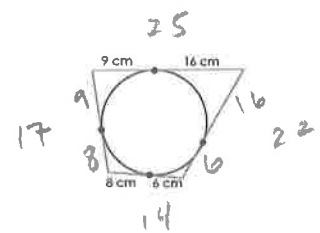


$5(8) = x(10)$
 $40 = 10x$
 $x = 4$

24. Find the perimeter.

A. 70 cm B. 73 cm

C. 75 cm D. 78 cm



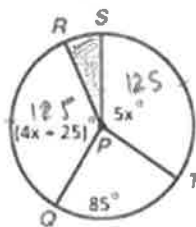
25. What is the measure of angle RPS?

A. 25°

B. 125°

C. 85°

D. 35°



$4x + 25 = 5x$
 $-4x$

 $x = 25$

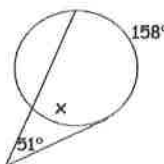
27. What is the measure of the intercepted arc?

A. 50°

B. 53°

C. 56°

D. 59°



$2 \cdot 51 = \frac{158 - x}{2}$
 $102 = 158 - x$
 $x = 56^\circ$

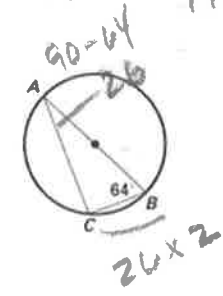
28. What is the measure of arc BC?

A. 26°

B. 52°

C. 90°

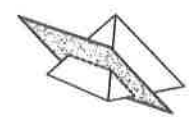
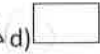
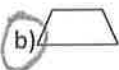
D. 180°



$(4x + 53)^\circ$
 130
 -50
 -65

 65
 $65 = \frac{4x + 53}{2}$
 $130 = 4x + 53$
 -53
 $77 = 4x$

29. What is the cross-section of the figure shown?



30. Find the line that is perpendicular to $y = \frac{5}{3}x - 2$ and passes through point $A(-12, 3)$. $-\frac{3}{5}$

- A. $y = -\frac{3}{5}x - 2$ B. $y = \frac{5}{3}x + 7$
 C. $y = \frac{5}{3}x - \frac{21}{5}$ D. $y = -\frac{3}{5}x - \frac{21}{5}$

$$3 = -\frac{3}{5}(-12) + b$$

$$3 = \frac{36}{5} + b \quad b = \frac{3}{5} - \frac{36}{5} = -\frac{33}{5}$$

31. Find point Y that partitions the directed line segment ZX in a ratio of 4:3.
 $X(-4, 8)$ and $Z(-10, -2)$

- A. $(-7.43, 2.29)$ B. $(-7.43, 3.71)$
 C. $(-6.57, 2.29)$ D. $(-6.57, 3.71)$

$$x = -10 + \frac{4}{7}(6)$$

$$y = -2 + \frac{3}{7}(10)$$

32. Put $3x^2 + 3y^2 - 24x + 12y + 13 = 0$ into standard form of a circle and find the center and radius.

- A. Center: $(-4, 2)$, $r = 12$
 B. Center: $(-4, 2)$, $r = 16$
 C. Center: $(4, -2)$, $r = 15.67$
 D. Center: $(4, -2)$, $r = 3.96$

$$-8x + 4y = -4.33$$

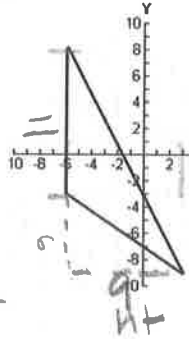
$$-\frac{8}{2} = (-4)^2 = 16$$

$$\frac{4}{2} = (2)^2 = 4$$

$$15.67$$

33. Find the perimeter and area $(\frac{b \cdot h}{2})$ of the obtuse triangle at right.

- A. 51, 42 B. 50, 42
 C. 49.5, 41 D. 49, 41



$$\frac{11 \cdot 9}{2} = \frac{99}{2} = 49.5$$

$$d = \sqrt{(17)^2 + (9)^2} \quad d = \sqrt{(6)^2 + (9)^2}$$

$$11 + 19.24 + 10.82 \approx 41$$

34. Convert to general form to one decimal.

$$(x - 7)^2 + (y + 4)^2 = 2\sqrt{5.29}$$

- A. $x^2 + y^2 - 14x + 8y + 59.71 = 0$
 B. $x^2 + y^2 - 7x + 4y + 37 = 0$
 C. $x^2 + y^2 - 14x + 8y + 31 = 0$
 D. $x^2 + y^2 - 7x + 4y + 31 = 0$

$$x^2 - 14x + 49$$

$$+ y^2 + 8y + 16$$

$$- 5.29 = 0$$

35. In a particular state, the first character on a license plate is always a letter. The last character is always a digit from 0 to 9. If V represents the set of all license plates beginning with a vowel, and O represents the set of all license plates that end with an odd number, which license plate belongs to the set V and O?

- a) $\boxed{E23 PC8}$ b) $\boxed{MG4 3F5}$ c) $\boxed{AR8 8X9}$ d) $\boxed{P7M Z56}$

V = Vowel
 O = odd #

36. A random survey was conducted about gender and hair color. This table records the data. What is the probability that a randomly selected person has blonde hair, given that the person selected is male?

		Hair Color			
		Brown	Blonde	Red	Total
Male	548	876	82	1,506	
Female	612	716	66	1,394	
Total	1,160	1,592	148	2,900	

- a) 0.51 b) 0.55
 c) 0.58 d) 0.63

$$P(BH | male)$$

$$\frac{876}{1506}$$

37. In soccer, a shutout is a game where the winning team does not allow the other team to score a goal. If the set W represents all wins, and S represents all shutouts, which set describe the set of all shutout wins?

- a) $W \cap S$ b) $W \cup S$ c) $W \cap S'$ d) $(W \cup S)'$

Wins and Shutouts

38 & 39. On a separate sheet of paper, construct an angle bisector, and perpendicular bisector.

