Geometry Final Exam Specifications Sheet

Part I - Free Response

1 Definition
2 Logic
3 Formula Derivation
4 Theorem / Postulate
5 Geometric Proof
6 Coordinate Geometry Proof

Part II - Multiple Choice

 1 Angle relationships
 2 Conditional statements
 3 Inductive and deductive reasoning
 4 Line and angle relationships
 5 Parallel lines cut by a transversal
 6 Slopes of parallel/perpendicular lines
 7 Equations of parallel/perpendicular lines
 8 Measures of missing interior/exterior angles of a polygon
 9 Reasons for steps of a proof
10 Congruent polygons
11 Corresponding parts of congruent polygons
12 Special segments of a triangle
13 Segment and angle bisectors
14 Special segments of a triangle
15 Special polygon properties
16 Midsegment Theorem
17 Measure of a missing side using similar polygons
18 Measure of a missing side using similar polygons
19 Dimensions of similar solids
20 Properties of special right triangles
21 Trigonometry ratios
22 The Pythagorean Theorem
23 Definition of the parts of a circle
24 Identification of the parts of a circle
25 Properties of the parts of a circle
26 The equation of a circle
27 The area of a figure
28 The perimeter/circumference of a figure
29 The perimeter/circumference of a figure
30 The area of shaded region
31 The volume of a solid
32 The surface area of a solid
33 The volume of a solid
34 The effect of changing the dimensions of a prism on volume or surface area
35 The measure of a missing angle of a polygon
36 Congruence or similarity relationships with polygons
37 The steps needed to complete a proof involving polygons
38 The relationship between arc and angle measures
39 Transformations
40 Ratio of perimeter/area/volume when changing dimensions of a figure
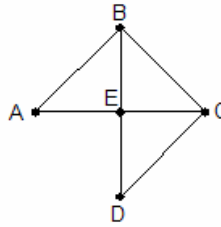
Geometry Practice Final Exam
Free Response

1. What is the definition of a radius of a polygon?

2. Write the contrapositive of the statement "If it is windy, then the kite will fly."

3. Explain how to derive the formula for finding the sum of interior angles of a polygon.

4. What is the Side-Side-Side (SSS) Similarity Theorem?

5. Given: $\overline{BED}$ bisects $\overline{AEC}$, $\overline{AB} \parallel \overline{CD}$.
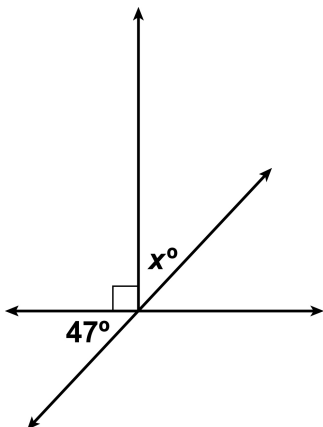   Prove: $\overline{ED} \cong \overline{EB}$

6. Given: The points $A(-1,4)$, $B(3,-2)$, $C(0,-4)$, and $D(-4,2)$ form a quadrilateral.
   Prove: $ABCD$ is a rectangle.

1. What is the value of *x*?

A. 43

B. 47

C. 53

D. 57

2. What conclusion would be true given the hypothesis "If angle 1 is congruent to angle 2, and angle 2 is congruent to angle 3, then..."?

A. the measure of angle 1 is greater than angle 3.

B. the measure of angle 1 is less than angle 3.

C. angle 1 is supplementary to angle 3.

D. angle 1 is congruent to angle 3.

3. What statement below is an example of inductive reasoning?

A. If it is storming, the track meet will be cancelled. It is storming. Therefore, the track meet will be cancelled.

B. The sum of the angles in a triangle is 180 degrees. Triangle ABC has angles measuring 50 degrees and 60 degrees. Therefore, the third angle must measure 70 degrees.

C. Each day Tom observes that the mailman arrives around 10 a.m. Today is Monday, so the mailman should arrive around 10 a.m.

D. If a person lives in Florida, then he or she lives in the United States. Emily lives in Florida. Therefore, she lives in the United States.
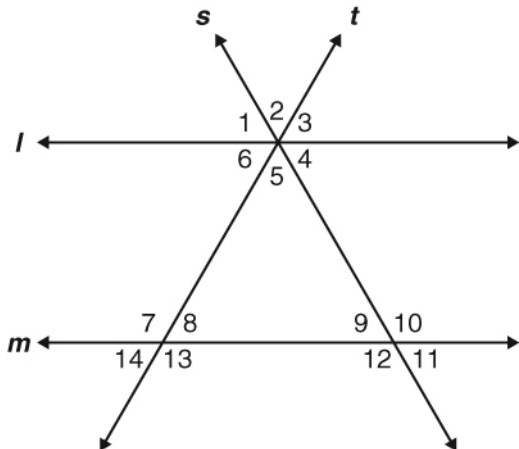
4. In the picture, which condition ensures that lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are parallel?
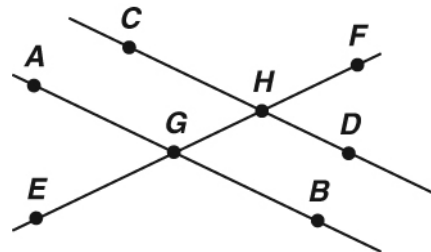
A. ∠ *AGE* is the supplement of ∠ *EGB*.

B. ∠ *CHF* is the supplement of ∠ *DHF*.

C. ∠ *AGE* is congruent to ∠ *BGH*.

D. ∠ *AGE* is congruent to ∠ *DHF*.

GO ON

5. Given: $l \parallel m$ and lines s and t are transversal through both l and m. Which statement is true about the angles formed by these lines?


A. Angles 2 and 6 are vertical angles.

B. Angles 2 and 10 are corresponding angles.

C. Angles 4 and 9 are alternate interior angles.

D. Angles 10 and 11 are complementary angles.

6. What is the slope of a line parallel to the graph of $3x - 5y = 18$?

A. $\dfrac{5}{3}$

B. $\dfrac{3}{5}$

C. $-\dfrac{3}{5}$

D. $-\dfrac{5}{3}$

7. Which equation represents the line that passes throught the point (2, 3) and is perpendicular to $4x - 5y = 7$?

A. $5y - 4x = 7$

B. $4y - 5x = 2$

C. $5y + 4x = 23$

D. $4y + 5x = 22$

8. What is the value of X in the figure below?

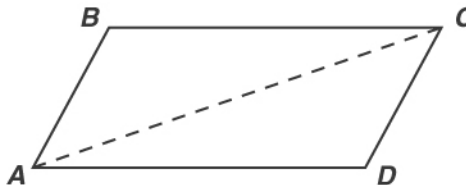**A.** 54°

B. 75°

C. 85°

D. 105°

GO ON
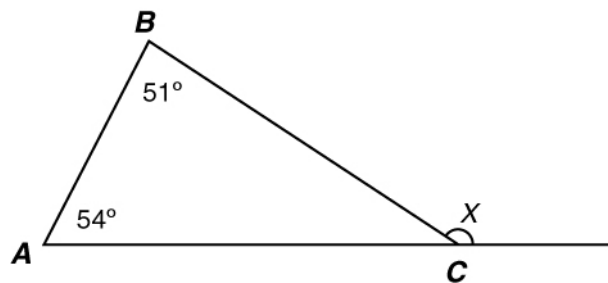
9. Thomas needs to prove the following theorem.

If one pair of opposite sides of a quadrilateral is congruent and parallel, then the quadrilateral is a parallelogram.

He draws the figure below and begins his proof.

Given: $\overline{AB} \cong \overline{DC}$
$\overline{AB} \parallel \overline{DC}$

Prove: *ABCD* is a parallelogram

Statements	Reasons
1. $\overline{AB} \cong \overline{DC}$ $\overline{AB} \parallel \overline{DC}$	1. Given
2. $\angle BAC \cong \angle DCA$	2. ?

What should be Thomas's reason for Step 2?

A. Vertical angles are congruent.

B. Congruent parts of congruent triangles are congruent.

C. If parallel lines are cut by a transversal, corresponding angles are congruent.

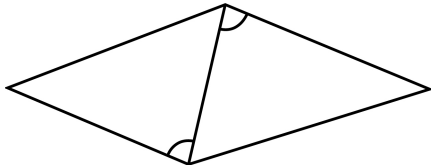**D.** If parallel lines are cut by a transversal, alternate interior angles are congruent.

3

GO ON

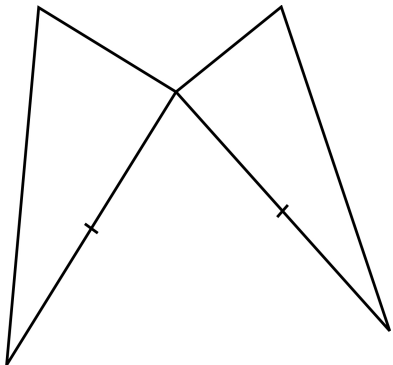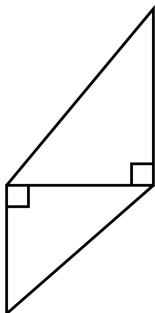**10. Which figure contains two congruent triangles?**
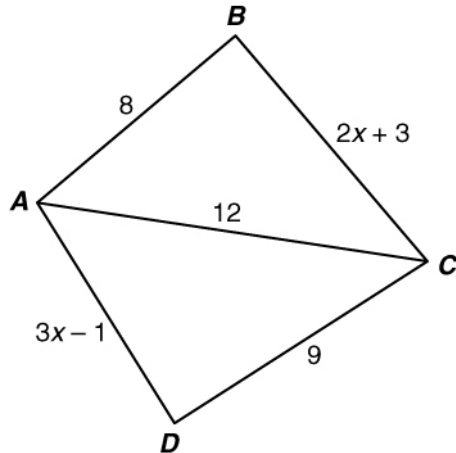
A.
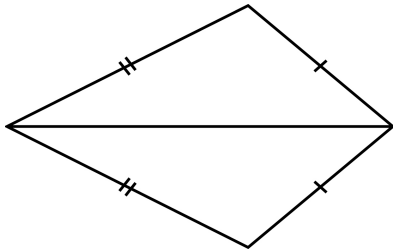
B.

C.

D.

11. If $\triangle ABC \cong \triangle ADC$, which equation MUST be true?

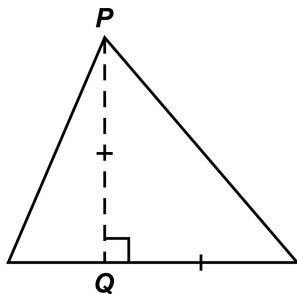**A.** $2x + 3 = 6$

B. $2x + 3 = 9$

C. $3x - 1 = 6$

D. $3x - 1 = 9$

GO ON

12. In which figures is $\overline{PQ}$ a perpendicular bisector?
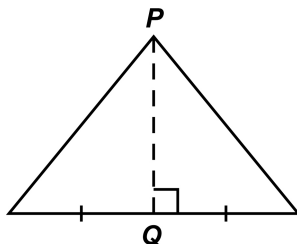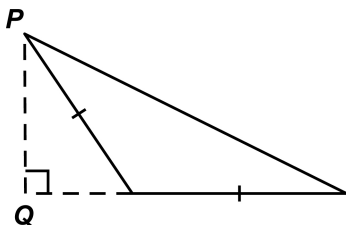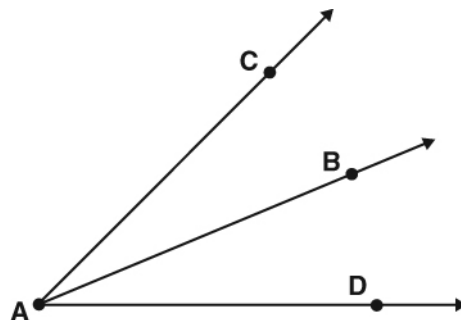
A.
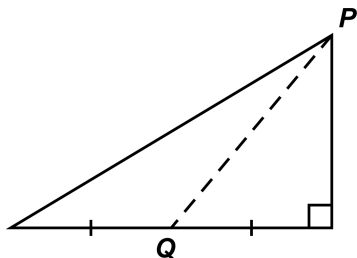
B.

C.

D.

13. In the drawing below, $\overrightarrow{AB}$ is an angle bisector of $\angle CAD$.

Which statement describes $\angle CAB$ and $\angle BAD$?

A. $\angle CAB$ and $\angle BAD$ are obtuse.

B. $\angle CAB$ and $\angle BAD$ are vertical.

C. $\angle CAB$ and $\angle BAD$ are congruent.

D. $\angle CAB$ and $\angle BAD$ are complementary.

**14. In what type of triangle are the medians, altitudes and bisectors the same line?**

A. Acute triangle

B. Equilateral triangle

C. Obtuse triangle

D. Right triangle

15. Which statement is true about all parallelograms?

A. A parallelogram has 4 acute angles.

B. A parallelogram has 4 right angles.

C. A parallelogram has 2 pairs of parallel lines.
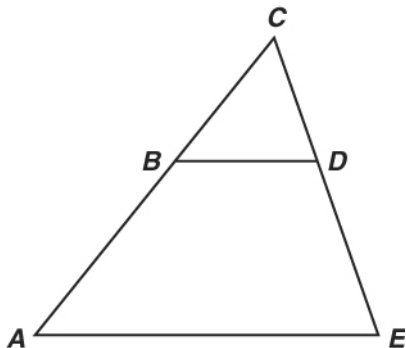
D. A parallelogram has all sides with equal length.

GO ON

16. In the triangle below, $\overline{PQ}$ is a line segment joining the midpoints of two sides of the triangle.
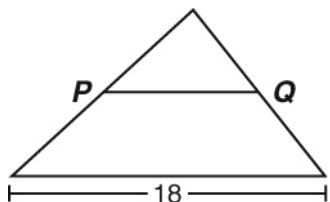
What is the length of $\overline{PQ}$?

A. 4.5

B. 6

C. 9

D. 12

17. In the figure below, $\triangle ACE \sim \triangle BCD$.

Which of these proportions is true?

A. $\dfrac{AC}{AE} = \dfrac{BC}{BD}$

B. $\dfrac{AC}{BC} = \dfrac{BD}{AE}$

C. $\dfrac{BC}{BD} = \dfrac{AE}{AC}$

D. $\dfrac{AE}{BD} = \dfrac{BD}{AC}$

18. $\varDelta QRS$ is similar to $\varDelta TUV$. The length of $\overline{QR}$ is 2 centimeters (cm). The length of $\overline{RS}$ is 4 cm. The length of $\overline{TU}$ is 8 cm. What is the length of $\overline{UV}$?
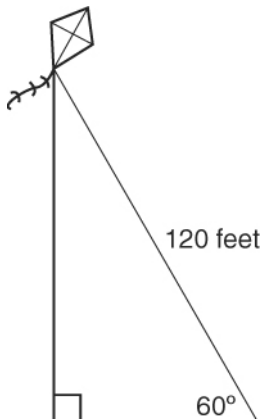
A. 1

B. 4

C. 14

D. 16

19. A rectangular prism has a length of 5.2 cm, a width of 4.4 cm, and a height of 3.6 cm. Which of the following dimensions, in the same order, represents a similar rectangular prism?

A. 7.8 cm, 6.6 cm, 5.4 cm

B. 8.2 cm, 7.4 cm, 6.6 cm

C. 9.1 cm, 7.7 cm, 6.7 cm

D. 15.6 cm, 8.8 cm, 10.8 cm

GO ON

**20.** A kite is on a string as shown in the figure below.

The string makes an angle of 60° with the ground. If the length of the string is 120 feet, what is the height of the kite above the ground, in feet?

A. 60

B. $60\sqrt{3}$

C. 120

D. $120\sqrt{3}$

21. In $\triangle XYZ$, $m \angle Y = 90$. Which ratio represents the tangent of $\angle Z$?

A. $\dfrac{ZY}{XY}$

B. $\dfrac{XY}{ZY}$

C. $\dfrac{ZY}{XZ}$

D. $\dfrac{XY}{XZ}$

22. Mr. Hamilton is placing a support plank along the diagonal of a gate. The height of the gate is 5 feet, and the diagonal is 1 foot longer than the width of the gate, as shown below.
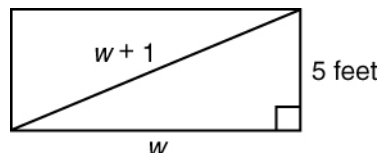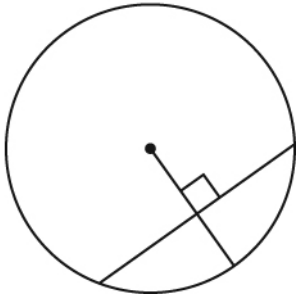

What is the width, in feet, of the gate?

A. 3

B. 6

C. 12

D. 24

23. What is the distance from the center of the circle to any point on the circle called?

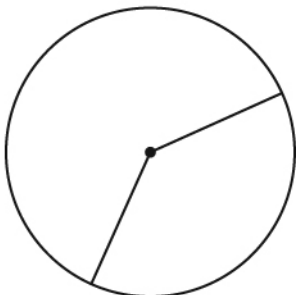**A.** circumference

B. diameter

C. radius

D. pi

GO ON

24. Which circle displays a central angle?
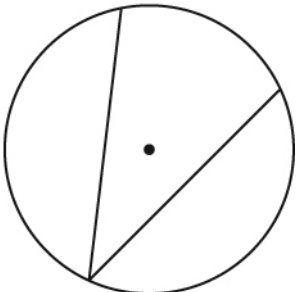
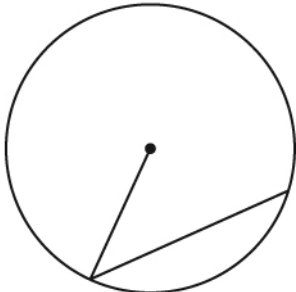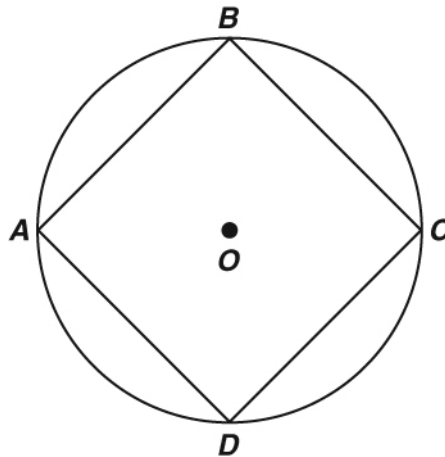**A.**

B.

C.

D.

25. Rhombus *ABCD* is inscribed in circle *O*. How would you classify angle *D* if it is opposite angle *B* in the rhombus?

A. acute

B. right

C. obtuse

D. straight

26. At what point does the circle with radius $\sqrt{13}$ and center at $(-5, \ -2)$ cross the x−axis?

A. At $(-2, \ 0)$ and $(-8, 0)$

B. At $(-2, \ 0)$ and $(-5, \ 0)$

C. At $(2, \ 0)$ and $(8, \ 0)$

D. The circle does not cross the x-axis.

**27. The diameter of a circle is 10 meters. What is the area, in square meters, of the circle?**

A. 10π

B. 20π

C. 25π

D. 100π

28. A steering wheel has a radius of 7 inches. What is the approximate circumference, in inches, of the steering wheel?

**A.** 21.98

B. 43.96

C. 87.92

D. 153.86

29. Martin is putting tape along the edge of a rectangle to make a game court on his driveway. The rectangle is 12 feet long and *x* feet wide, as shown below.
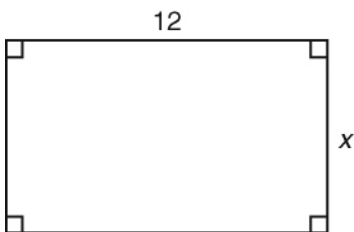
If the rectangle will have a perimeter of 40 feet, which equation below is true?

A. $12x = 40$

B. $24x = 40$

C. $x + 12 = 40$

D. $2x + 24 = 40$

30. The figure below shows a round plate that is white with a 2-inch gray border around it.
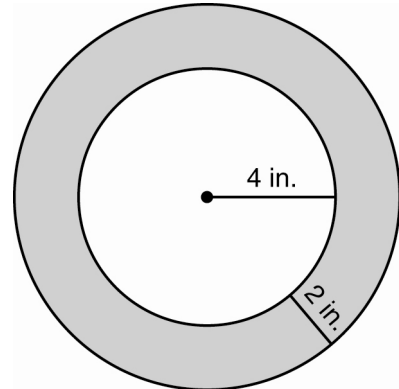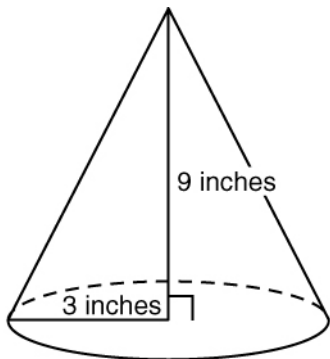

What is the area of just the gray border?

A. 4π square inches

B. 12π square inches

C. 20π square inches

D. 36π square inches

GO ON

31. What is the volume, in cubic inches, of the cone below?

9 inches

3 inches

Note: The figure is not drawn to scale.

A. 18π

B. 27π

C. 81π

D. 108π

32. The figure below represents a rectangular prism with square bases 10 centimeters long on each side.

3 cm

10 cm

10 cm
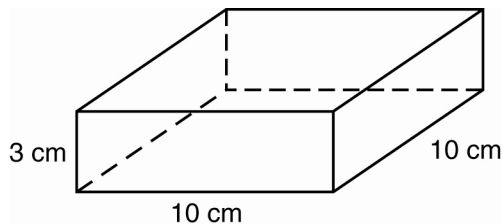
What is the surface area of the prism?

A. 160 square centimeters

B. 180 square centimeters

C. 300 square centimeters

D. 320 square centimeters

33. The sandbox at a playground has measurements, in feet, as shown below.

2 ft

9 ft

11 ft
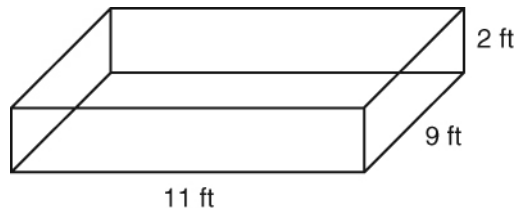
What is the volume of the sandbox?

A. 99 cubic feet

B. 178 cubic feet

C. 188 cubic feet

D. 198 cubic feet

34. If each dimension of the rectangular prism below were doubled, by what factor would the volume increase?
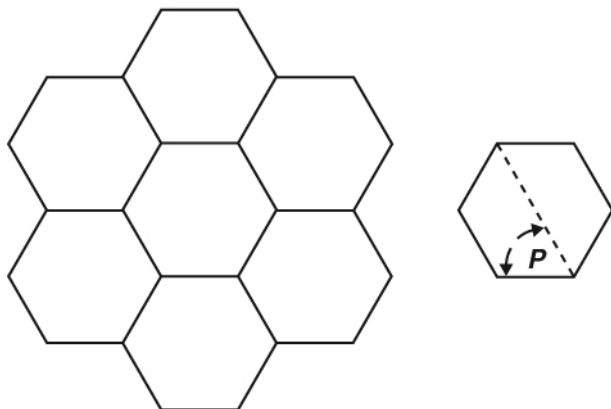

4 meters

5 meters

8 meters

A. 2

B. 4

C. 6

D. 8

GO ON
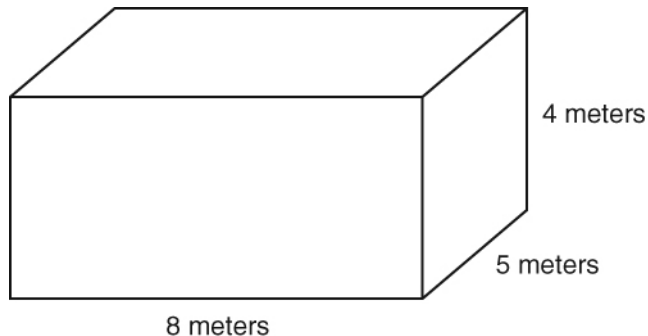
35. A floor is being covered with regular hexagonal tiles. A tile must be cut in half, as shown, to fit against a wall.

Floor Tiling
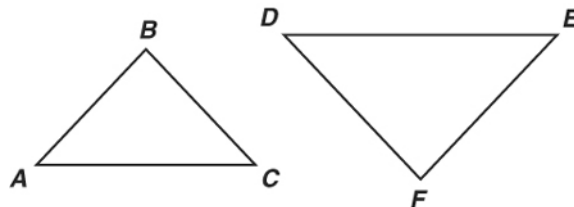
What is the measure of angle *P* in the cut tiles?

A. 45°

B. 60°

C. 90°

D. 120°

36. In the triangles below, $\dfrac{AB}{EF} = \dfrac{BC}{FD}$ and $\angle C \cong \angle D$.

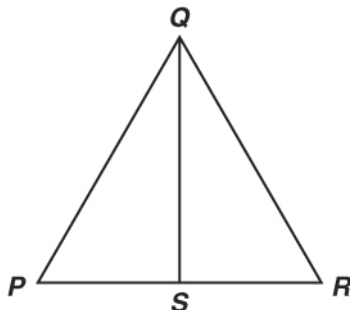Which of the following statements must be true?

A. $\overline{AC} \cong \overline{DE}$

B. $\overline{AB} \cong \overline{EF}$

C. $\varDelta ABC \sim \varDelta EFD$

D. $\varDelta ABC \cong \varDelta EFD$

GO ON

37. Manuel is trying to prove the following theorem.

"If 2 sides of a triangle are congruent, then the angles opposite these sides are congruent."
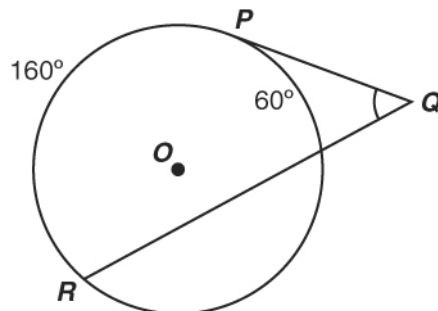
First, Manuel draws $\triangle PQR$ with $\overline{PQ} \cong \overline{QR}$, and he adds $\overline{QS}$ that bisects $\angle PQR$ as shown below.

What is the next step in Manuel's proof?

A. State that $\angle P \cong \angle R$

B. State that $\overline{PS} \cong \overline{SR}$

C. State that $\angle PQS \cong \angle RQS$

D. State that $\angle PQR$ is a right angle

38. $\overline{PQ}$ is tangent to Circle O at Point P with arc lengths 160° and 60° as shown below.

What is the measure of $\angle Q$?

A. 50°

B. 60°

C. 100°

D. 110°

39. The point $(2, 3)$ is reflected over the line $y = x$ to create Point A. What are the coordinates of A?

A. $(2, 3)$

B. $(3, 2)$

C. $(5, 5)$

D. $(2, 1)$

40. Circle A has radius 4 feet. Circle B has radius 9 feet. What is the ratio of the area of circle A to the area of circle B?

A. $\dfrac{2}{3}$

B. $\dfrac{4}{9}$

C. $\dfrac{8}{27}$

D. $\dfrac{16}{81}$

GO ON

Geometry Practice Final Exam Answer Key

1	A	21	B
2	D	22	C
3	C	23	C
4	D	24	B
5	C	25	B
6	B	26	A
7	D	27	C
8	D	28	B
9	D	29	D
10	A	30	C
11	B	31	B
12	C	32	D
13	C	33	D
14	B	34	D
15	C	35	B
16	C	36	C
17	A	37	C
18	D	38	A
19	A	39	B
20	B	40	D