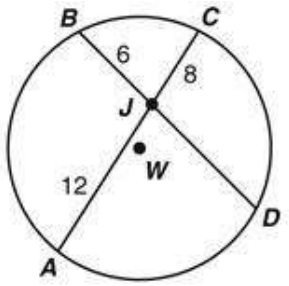
TEST NAME: **Exam Review #3 G & S**
TEST ID: **1089156**
GRADE: **10 - Tenth Grade - 11 - Eleventh Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **My Classroom**

Student: _____

Class: _____

Date: _____

1. **In Circle W, chords $\overline{AC}$ and $\overline{DB}$ intersect at Point *J* as shown below.**

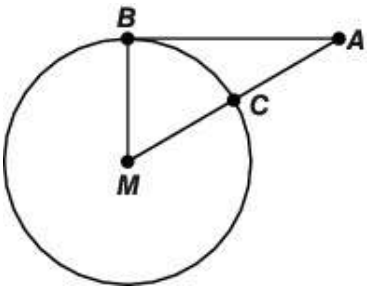


Note: The figure is not drawn to scale.

If *AJ* = 12, *JC* = 8, and *BJ* = 6, what is *JD*?

A. 4
B. 9
C. 16
D. 24

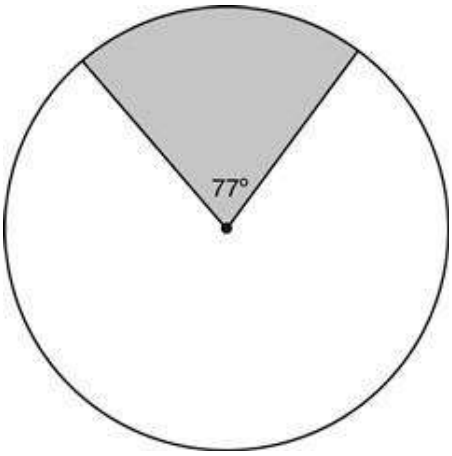
2. In the given figure, $\overline{AB}$ is tangent to circle M at point B.



If $MB = 8, AB = x + 4$, and $AC = x - 2$, find the length of $\overline{AC}$.

A. 9
B. 11
C. 15
D. 17

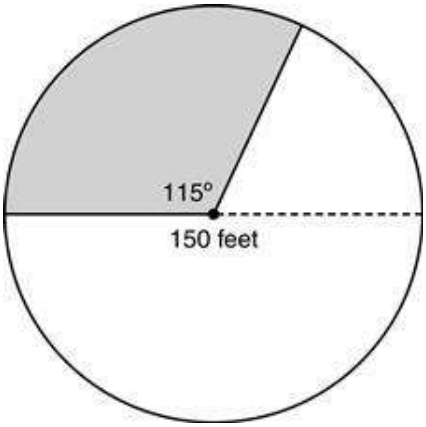
3. **The shaded area in the circle below represents a damaged section of a 6-foot-diameter tabletop.**



What value is closest to the area of the damaged section?

A. 4.0 square feet
B. 6.0 square feet
C. 7.7 square feet
D. 8.1 square feet

4. **A security camera is set to record the activities in a 115° sector of a parking lot as represented by the shaded region of the circle below.**



Which measurement is closest to the area of the parking lot recorded by this security camera?

A. 5645 square feet
B. 17,671 square feet
C. 22,580 square feet
D. 70,686 square feet

5. **Consider these statements.**

• No equilateral triangles are obtuse.
• Triangle *KJF* is obtuse.

Which conclusion can be made using both statements?

A. Triangle *KJF* is scalene.
B. Triangle *KJF* is not isosceles.
C. Triangle *KJF* is a right triangle.
D. Triangle *KJF* is not equiangular.

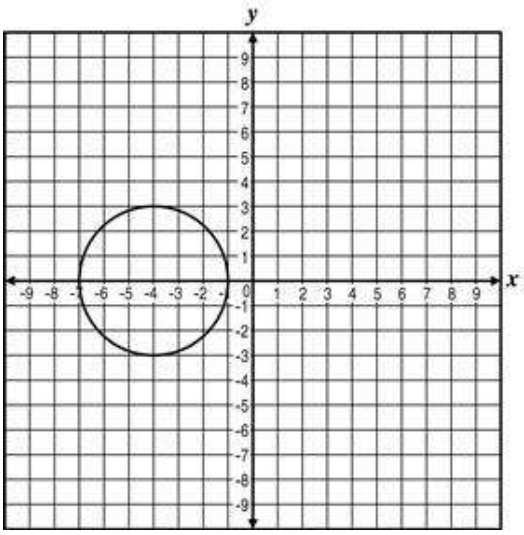
6. **Read the sentence.**

   All equilateral triangles are similar.

   Given the statement, which of the following is an accurate conclusion?

   A. The statement cannot be shown to be true because the length of a side is not given.
   B. The statement cannot be shown to be true because the triangles may have a side in common.
   C. The statement can be shown to be false by using the fact that two equilateral triangles can have different areas.
   D. The statement can be shown to be true by using the fact that all the angles are 60°, and each triangle has 3 congruent sides.

7. **A circle is graphed on the coordinate plane below.**



Which equation represents this circle?

   A. $x^2 + (y-4)^2 = 9$
   B. $(x+4)^2 + y^2 = 9$
   C. $(x-4)^2 + y^2 = 3$
   D. $x^2 + (y+4)^2 = 3$

8. **What is an equation of the circle with radius 9 and center** $(-5, 3)$?

   A. $(x-5)^2 + (y+3)^2 = 9$
   B. $(x+5)^2 + (y-3)^2 = 9$
   C. $(x-5)^2 + (y+3)^2 = 81$
   D. $(x+5)^2 + (y-3)^2 = 81$

9. What is the equation of a parabola with a focus at $(2, 6)$ and a directrix of $x = -2$?

A. $x = \frac{1}{8}(y-6)^2$

B. $x = -\frac{1}{8}(y-6)^2$

C. $x = \frac{1}{16}(y-2)^2+2$

D. $x = -\frac{1}{16}(y-2)^2+2$

10. **Which equation represents a parabola with focus** $(3, -8)$?

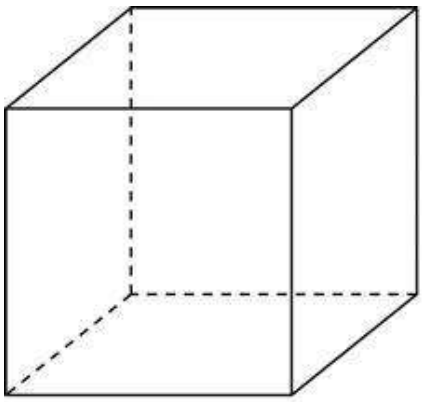
A. $y = \frac{1}{4}(x-3)^2 - 9$

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

C. $y = \frac{1}{4}(x-3)^2 - 10$

D. $y = 4(x+3)^2 + 7$

11. **A cube-shaped packing box like the one shown below is used to pack a stack of dinner plates.**



Packing Box

If the volume of the box is 1,000 cubic inches, what is the maximum circumference of the dinner plates that will fit in the box, to the nearest tenth of an inch?

A. 15.7 inches

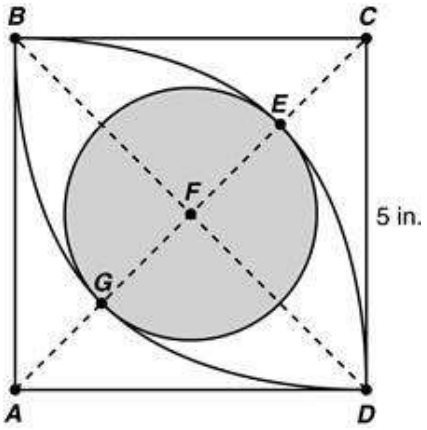
B. 31.4 inches

C. 78.5 inches

D. 99.3 inches

12. **A company logo of an eye consists of two arcs and a circle drawn within a square. The company prints its logo on the side of a square box of side length 5 inches as shown.**

- Arc *BED* is drawn from Point *A*.
- Arc *BGD* is drawn from Point *C*.
- Circle *F* is tangent to Arc *BED* and Arc *BGD* at Points *E* and *G*, respectively.



What is the area of the circle of the eye?

A. $13.48\ \text{in}^2$
B. $9.20\ \text{in}^2$
C. $6.74\ \text{in}^2$
D. $3.14\ \text{in}^2$

13. Diane dilated the image of triangle ABC with the center of dilation at the origin by a scale factor of $\frac{1}{2}$ and labeled the dilated image as ΔDEF.

Based on the transformation applied she lists her conclusions:

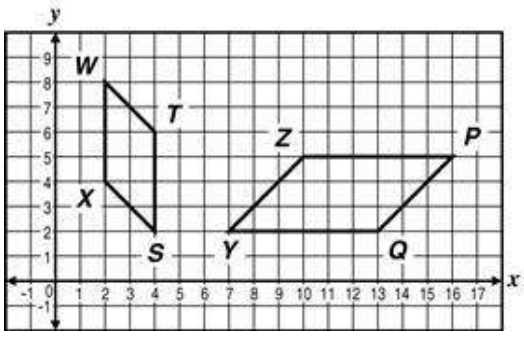
I. $\angle A \cong \angle D;\ \angle B \cong \angle E;\ \angle C \cong \angle F$

II. $\overline{AB} \cong \overline{DE};\ \overline{BC} \cong \overline{EF};\ \overline{CA} \cong \overline{FD}$

Which conclusion or conclusions are **correct**?

A. only I
B. only II
C. both I and II
D. neither I nor II

14. **Similar parallelograms *WTSX* and *PQYZ* are shown on the coordinate grid below.**



Based on the given information, which statement is a valid argument?

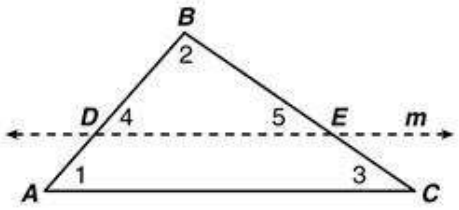
A. Because the two parallelograms are similar, $\frac{XT}{ZQ} = \frac{WS}{PY} = \frac{3}{2}$.

B. The scale factor for *SXWT* and *YZPQ* is 2 because $\overline{ZP}$ is 2 units longer than $\overline{XW}$.

C. Because the two parallelograms are similar and $\frac{YQ}{ST} = \frac{6}{4}$, the ratio $\frac{\text{Area of } YZPQ}{\text{Area of } SXWT} = \frac{3}{2}$.

D. The scale factor for *SXWT* and *YZPQ* is $\frac{3}{2}$ because the length of $\overline{YZ}$ is $3\sqrt{2}$ and the length of $\overline{SX}$ is $2\sqrt{2}$.

15. **Triangle *ABC* is shown. Line *m* is parallel to $\overline{AC}$.**



Roberto is proving that Line *m* cuts $\overline{AB}$ and $\overline{BC}$ into proportional segments. Here is Roberto's proof.

Given: $\overline{AC} \parallel \overleftrightarrow{m}$

1. $\angle 1 \cong \angle 4$	Corresponding Angle Postulate
2. $\angle 3 \cong \angle 5$	Corresponding Angle Postulate
3. $\Delta ABC \sim \Delta DBE$	Side-Side-Side Similarity Postulate
4. $\frac{AB}{DB} = \frac{BC}{BE} = \frac{AC}{DE}$	Proportional Parts Postulate

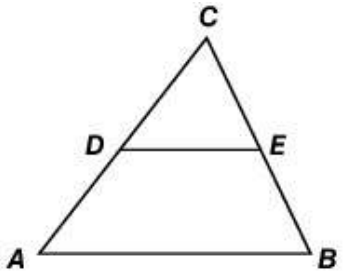
Which line shows an error in Roberto's proof?

A. Line 1
B. Line 2
C. Line 3
D. Line 4

16. Joan proved that a line parallel to one side of a triangle divides the two others proportionally. She writes the proof shown below.

Given: $\overline{DE} \parallel \overline{AB}$

Prove: $\frac{AD}{DC} = \frac{BE}{EC}$



Proof:

Statements	Reasons
1. $\overline{AB}$ is parallel to $\overline{DE}$	1. _____
2. $\angle CAB \cong \angle CDE$ and $\angle CBA \cong \angle CED$	2. _____
3. $\triangle ABC$ is similar to $\triangle DEC$	3. _____
4. $\frac{AC}{DC} = \frac{BC}{EC}$	4. _____
5. $\frac{AD + DC}{DC} = \frac{BE + EC}{EC}$	5. _____
6. $\frac{AD}{DC} + \frac{DC}{DC} = \frac{BE}{EC} + \frac{EC}{EC}$	6. _____
7. $\frac{AD}{DC} + 1 = \frac{BE}{EC} + 1$	7. _____
8. $\frac{AD}{DC} = \frac{BE}{EC}$	8. _____

Which of these reasons would NOT be included in Joan's proof?

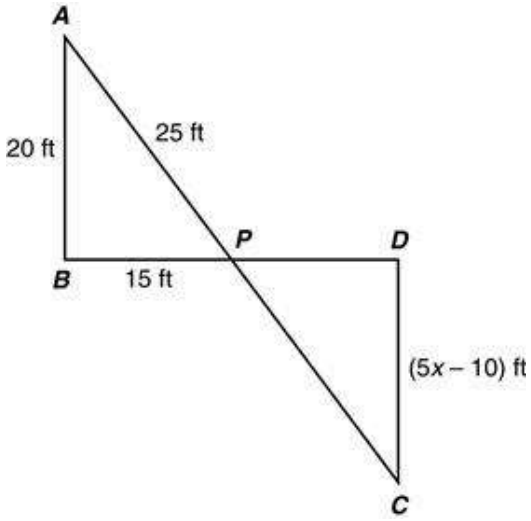
A. AA Similarity Postulate

B. Corresponding Angles Postulate

C. Subtraction Property of Equality

D. Alternate Interior Angles Theorem

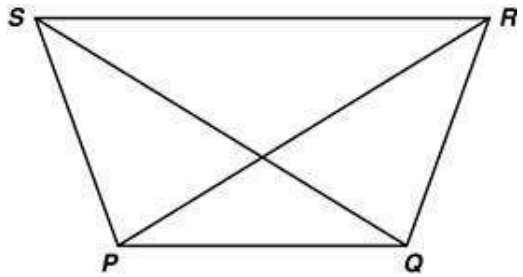
17. **In the diagram below: Points *A*, *P*, and *C* are collinear; *P* bisects $\overline{BD}$, $\overline{AB} \perp \overline{BD}$, and $\overline{DC} \perp \overline{BD}$.**



What is the value of *x*?

A. 7
B. 6
C. 5
D. 2

18. **In the figure below $\triangle PSQ \cong \triangle QRP$.**



Based on the given information, which statement must be true?

A. $\overline{SQ} \cong \overline{RP}$
B. $\overline{SR} \cong \overline{PQ}$
C. $\angle PSR \cong \angle QSR$
D. $\angle SRP \cong \angle RQS$

19. **A random sampling of 500 adults showed that 203 preferred Brand A potato chips more than all other brands of potato chips in the survey. Which interval reflects a 95% likelihood of containing *p*, the population proportion?**

A. $0.305 \le p \le 0.508$
B. $0.356 \le p \le 0.456$
C. $0.363 \le p \le 0.449$
D. $0.386 \le p \le 0.426$

20. **A random sample of shoppers chose between two similar products, and 60% chose Brand A. Based on the sample, 20 simulations were conducted, and the mean number of shoppers out of 100 that chose Brand A are shown below.**

Mean	Frequency
55	1
57	1
58	2
59	5
60	4
61	3
62	3
63	1

Based on the simulations, which of the following is the most likely margin of error for the sample?

A. ± 1
B. ± 3
C. ± 5
D. ± 16

21. **Which data set is least likely to resemble a normal distribution?**

A. the heights of all 14-year-old girls who live outside the state of Texas
B. the heights of all 14-year-old girls who go to school in the state of Texas
C. the heights of all 14-year-old girls who go to school in the city of Houston
D. the heights of all 14-year-old girls who live on a given street in the city of Houston