

Geometry Cumulative Study Guide

Test 11

Name: _____

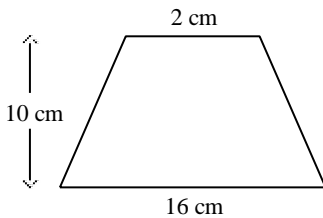
Date: _____

Period: _____

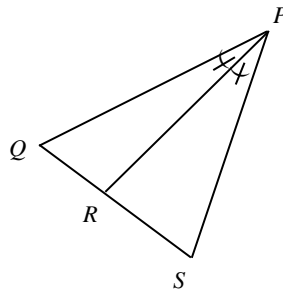
Numeric Response

1. How many faces does a polyhedron with 14 vertices and 18 edges have?

2. Find the area of the trapezoid below in square centimeters.



3. Using the diagram below, find QR if $PS = 18$, $RS = 9$, and $PQ = 20$.

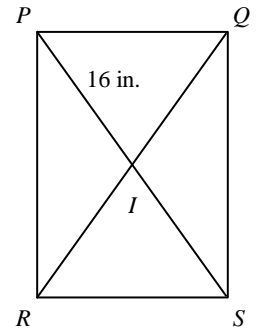


4. Find the distance from point $P(-8, 1)$ to the line $y = 5$.

5. A landscape architect is designing a garden in the shape of a regular hexagon. The side length of the garden measures 8 inches on a blueprint with the scale 1 inch: 10 feet. How many feet of fencing will be needed to surround the garden?

6. A triangle is equiangular and has a perimeter of 27 inches. Determine the length of each side in inches.

7. A rectangular frame is divided by diagonal edges as shown below. If PI is 16 inches long, what is the length of QR in inches?

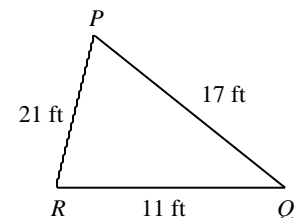


Problem

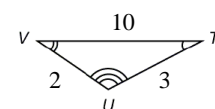
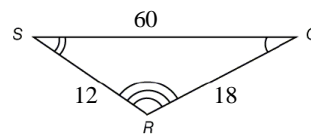
8. A movie theater sells tickets for children, adults, and senior citizens. The theater gives discounts on all children and senior citizen tickets. Consider the statements “a customer is a senior citizen” and “a customer gets a discount.” What is the conjunction of these statements? Use a truth table to assess its truth.

9. Find the arc length of \widehat{XY} in the circle with radius 6 centimeters and $m\widehat{XY} = 120^\circ$. Give your answer in terms of π .

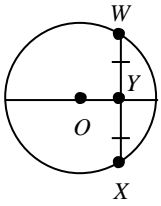
10. Order the measures of the angles in triangle PQR from least to greatest.



11. Write the ratio comparing VU to SR in three different ways, in simplest form.

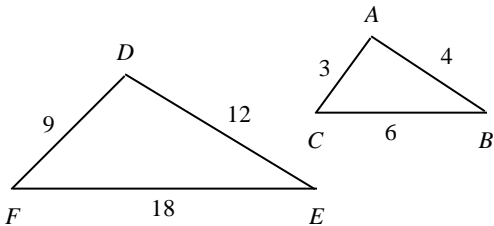


12. Find $m\angle OYX$ in the diagram below.

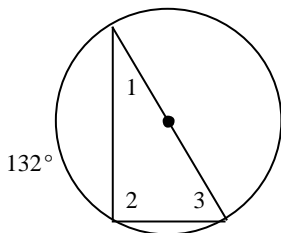


13. Triangle ABC has vertices $A(2, 0)$, $B(8, 0)$, and $C(5, 5)$. Use a coordinate proof to show that triangle ABC is an isosceles triangle.

14. Given the two triangles with values as shown below, show that they are similar triangles.



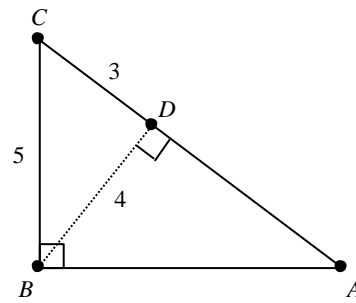
15. Find the measure of $\angle 1$, $\angle 2$, and $\angle 3$ in the diagram below.



16. Write an indirect proof to prove Theorem 39-2: If one angle of a triangle is larger than another angle, then the side opposite the first angle is longer than the side opposite the second angle.

Given: For $\triangle ABC$, $m\angle A > m\angle C$
 Prove: $BC > BA$

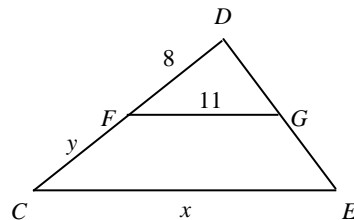
17. Find AD and AB in the diagram below.



18. Find the exact length of a hypotenuse of a 45° - 45° - 90° right triangle if one leg measures 7 centimeters.

19. Draw a pentagonal prism in one point perspective. Use a pencil with an eraser.

20. In the diagram below, \overline{FG} is a midsegment of triangle CDE . Find the values of x and y .



Geometry Cumulative Study Guide Test 11 Answer Section

NUMERIC RESPONSE

1. ANS: 6

PTS: 1 REF: Lesson 49: Introduction to Solids NAT: NCTM G.1a
TOP: Cumulative Test 11 MSC: Geom_S05_00065

2. ANS: 90

PTS: 1 REF: Lesson 22: Finding Areas of Quadrilaterals
NAT: NCTM M.2b TOP: Cumulative Test 11
MSC: Geom_S03_00060

3. ANS: 10

PTS: 1 REF: Lesson 38: Perpendicular and Angle Bisectors of Triangles
NAT: NCTM G.1d TOP: Cumulative Test 11 MSC: Geom_S04_00061

4. ANS: 4

PTS: 1 REF: Lesson 42: Finding Distance from a Point to a Line
NAT: NCTM G.1d TOP: Cumulative Test 11 MSC: Geom_S05_00058

5. ANS: 480

PTS: 1 REF: Lesson 44: Applying Similarity NAT: NCTM G.1b
TOP: Cumulative Test 11 MSC: Geom_S05_00063

6. ANS: 9

PTS: 1 REF: Lesson 51: Properties of Isosceles and Equilateral Triangles
NAT: NCTM G.1a TOP: Cumulative Test 11 MSC: Geom_S06_00053

7. ANS: 32

PTS: 1 REF: Lesson 52: Properties of Rectangles, Rhombuses, and Squares
NAT: NCTM G.1d TOP: Cumulative Test 11 MSC: Geom_S06_00056

PROBLEM

8. ANS:

A customer is a senior citizen *and* gets a discount; true

Statement p	Statement q	Conjunction p and q
T	T	T
T	F	F
F	T	F
F	F	F

The conjunction is true, because the theater gives discounts (q is true) to senior citizens (p is true).

PTS: 1 REF: Lesson 20: Interpreting Truth Tables
 NAT: NCTM RP.1d TOP: Cumulative Test 11
 MSC: Geom_S02_00117

9. ANS:
 4π centimeters

PTS: 1 REF: Lesson 35: Finding Arc Lengths and Areas of Sectors
 NAT: NCTM G.1a TOP: Cumulative Test 11 MSC: Geom_S04_00082

10. ANS:
 $\angle P, \angle R, \angle Q$

PTS: 1 REF: Lesson 39: Inequalities in a Triangle
 NAT: NCTM G.1a TOP: Cumulative Test 11 MSC: Geom_S04_00096

11. ANS:
 1 to 6; $1 : 6; \frac{1}{6}$

PTS: 1 REF: Lesson 41: Ratios, Proportions, and Similarity
 NAT: NCTM G.1b TOP: Cumulative Test 11 MSC: Geom_S05_00073

12. ANS:
 $m\angle OYX = 90^\circ$

PTS: 1 REF: Lesson 43: Chords, Secants, and Tangents
 NAT: NCTM G.1d TOP: Cumulative Test 11 MSC: Geom_S05_00078

13. ANS:

By the definition of an isosceles triangle, two of its sides have equal length. To verify that $\triangle ABC$ is an isosceles triangle, calculate each of the side lengths.

$$CB = \sqrt{(5-8)^2 + (5-0)^2} = \sqrt{34} \approx 5.8$$

$$AC = \sqrt{(2-5)^2 + (0-5)^2} = \sqrt{34} \approx 5.8$$

$$AB = \sqrt{(2-8)^2 + (0-0)^2} = \sqrt{36} = 6$$

Since \overline{CB} and \overline{AC} are the same length, $\triangle ABC$ is an isosceles triangle.

PTS: 1 REF: Lesson 45: Introduction to Coordinate Proofs
 NAT: NCTM RP.1c TOP: Cumulative Test 11

MSC: Geom_S05_00086
 14. ANS:

1. $\frac{AC}{DF} = \frac{3}{9} = \frac{1}{3}$ 1. Similarity ratio for $AC : DF$

2. $\frac{AB}{DE} = \frac{4}{12} = \frac{1}{3}$ 2. Similarity ratio for $AB : DE$

3. $\frac{CB}{FE} = \frac{6}{18} = \frac{1}{3}$ 3. Similarity ratio for $CB : FE$

4. $\triangle ACB \sim \triangle DFE$ 4. SSS Similarity Theorem

PTS: 1 REF: Lesson 46: Triangle Similarity: AA, SSS, SAS
 NAT: NCTM G.1b TOP: Cumulative Test 11 MSC: Geom_S05_00089
 15. ANS:
 $m\angle 1 = 24^\circ$; $m\angle 2 = 90^\circ$; $m\angle 3 = 66^\circ$

PTS: 1 REF: Lesson 47: Circles and Inscribed Angles
 NAT: NCTM G.1d TOP: Cumulative Test 11 MSC: Geom_S05_00092
 16. ANS:

Assume that $BC \leq BA$.

Case 1: If $BC < BA$, then $m\angle C > m\angle A$, because if one side is longer than another side, then the angle opposite the longer side is larger. This contradicts given information, so BC is not less than BA .

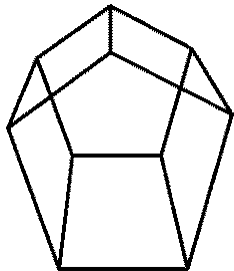
Case 2: If $BC = BA$, then $m\angle A = m\angle C$ by the Isosceles Triangle Theorem. This contradicts given information, so BC is not equal to BA .

Therefore, $BC > BA$.

PTS: 1 REF: Lesson 48: Indirect Proofs NAT: NCTM RP.1c
 TOP: Cumulative Test 11 MSC: Geom_S05_00094
 17. ANS:
 $AD = 5.3$, $AB = 6.6$

PTS: 1 REF: Lesson 50: Geometric Mean NAT: NCTM G.1d
 TOP: Cumulative Test 11 MSC: Geom_S05_00097
 18. ANS:
 $7\sqrt{2}$ centimeters

PTS: 1 REF: Lesson 53: 45°-45°-90° Right Triangles
 NAT: NCTM G.1d TOP: Cumulative Test 11 MSC: Geom_S06_00077
 19. ANS:



Sample:

PTS: 1 REF: Lesson 54: Representing Solids NAT: NCTM G.4a
 TOP: Cumulative Test 11 MSC: Geom_S06_00078
 20. ANS:
 $x = 22$, $y = 8$

PTS: 1 REF: Lesson 55: Triangle Midsegment Theorem
 NAT: NCTM G.1d TOP: Cumulative Test 11 MSC: Geom_S06_00080

st 10 MSC: Geom_S05_00095