

Watch. Practice. Understand. | Lesson 053

2021 Geometry Sample Final

Watch the matching video: <https://www.youtube.com/watch?v=gkzP6x0vBzc>

Practice focus: Triangles, congruence and inequality

Related course review; confirm topics with your teacher.

Name: _____ Date: _____ Show your reasoning and check units.

01 A triangle has angles x , $2x$ and $3x$ degrees. Find and classify its angles.

02 Can sides of lengths 4, 7 and 12 form a triangle?

03 Two triangles have matching sides 5 and 8 and the included angle 40° . Are they congruent?

04 In congruent triangles ABC and DEF (in that order), $AB = 7$ and angle $C = 50^\circ$. Find DE and angle F.

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Practice focus: Circles, chords and equations

Related course review; confirm topics with your teacher.

Name: _____ Date: _____ Show your reasoning and check units.

05 Write the circle with center (2, -3) and radius 5.

06 Find the center and radius of $x^2 + y^2 - 6x + 4y - 12 = 0$.

07 A chord of a radius-5 circle is 3 units from the center. Find its length.

08 An inscribed angle intercepts an arc measuring 100° . Find the angle.

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Practice focus: Volume and surface area

Related course review; confirm topics with your teacher.

Name: _____ Date: _____ Show your reasoning and check units.

09 A rectangular prism measures 3 by 4 by 5. Find volume and total surface area.

10 A cylinder has radius 3 and height 8. Find its volume and lateral area.

11 A cone has radius 3, height 4 and slant height 5. Find volume and total surface area.

12 A square pyramid has base side 6, height 4 and slant height 5. Find volume and total surface area.

Worked answers | Lesson 053

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01 A triangle has angles x , $2x$ and $3x$ degrees. Find and classify its angles.

$6x = 180$, so angles are 30° , 60° , 90° . It is a right triangle.

02 Can sides of lengths 4, 7 and 12 form a triangle?

No: $4 + 7 = 11 < 12$ violates the triangle inequality.

03 Two triangles have matching sides 5 and 8 and the included angle 40° . Are they congruent?

Yes, by SAS. The equal angle must be included between the matched sides.

04 In congruent triangles ABC and DEF (in that order), $AB = 7$ and angle $C = 50^\circ$. Find DE and angle F.

Corresponding parts of congruent triangles are congruent: $DE = 7$ and angle $F = 50^\circ$.

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05 Write the circle with center (2, -3) and radius 5.

$$(x - 2)^2 + (y + 3)^2 = 25.$$

06 Find the center and radius of $x^2 + y^2 - 6x + 4y - 12 = 0$.

Complete squares: $(x - 3)^2 + (y + 2)^2 = 25$. Center (3, -2), radius 5.

07 A chord of a radius-5 circle is 3 units from the center. Find its length.

The perpendicular from center bisects the chord. Half-chord = $\sqrt{(25 - 9)} = 4$; whole chord 8.

08 An inscribed angle intercepts an arc measuring 100° . Find the angle.

An inscribed angle is half its intercepted arc: 50° .

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Practice focus: Volume and surface area

Related course review; confirm topics with your teacher.

- 09** A rectangular prism measures 3 by 4 by 5. Find volume and total surface area.

$$V = 3 \cdot 4 \cdot 5 = 60; SA = 2(12 + 15 + 20) = 94.$$

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- 10** A cylinder has radius 3 and height 8. Find its volume and lateral area.

$$V = \pi r^2 h = 72\pi; \text{lateral area} = 2\pi r h = 48\pi.$$

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- 11** A cone has radius 3, height 4 and slant height 5. Find volume and total surface area.

$$V = \pi r^2 h / 3 = 12\pi. \text{ Total area} = \pi r^2 + \pi r l = 9\pi + 15\pi = 24\pi.$$

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- 12** A square pyramid has base side 6, height 4 and slant height 5. Find volume and total surface area.

$$V = (1/3)(36)(4) = 48. \text{ Lateral area} = (1/2)(24)(5) = 60; \text{total} = 96.$$