Unit 4 Review

MA.7.GR.1.1, MA.7.GR.1.2, MA.7.GR.1.3, MA.7.GR.1.4

I can find the area of any figure on this test, and the distance around or inside any circle.

Warm-Up

1. A circle has r = 10 cm. Find its area.
2. A circle has d = 20 cm. Find its circumference.
3. A parallelogram has base 9 cm and height 4 cm. Area?
4. –3.6 + 8.1

Warm-Up

1. A circle has r = 10 cm. Find its area. **314 cm²**
2. A circle has d = 20 cm. Find its circumference. **62.8 cm**
3. A parallelogram has base 9 cm and height 4 cm. Area?

   36 cm²
4. −3.6 + 8.1 **4.5**

Vocabulary

height

the perpendicular distance between the bases — never the slanted side

circumference

the distance around a circle: πd, or $2\pi r$ — the same formula

Notes

I. Which height?

Parallelogram and rhombus: $A = b \times h$. (4.01, 4.02)

Trapezoid: $A = \frac{1}{2} \times h \times (\text{base} + \text{base})$ — add the two bases first. (4.02)

Rhombus by its diagonals: four right triangles, so $A = \frac{1}{2} \times (\text{one diagonal}) \times (\text{the other})$. (4.02)

Notes

II. Which cut?

Cut into rectangles and triangles, then add. (4.04)

Or box it in, and subtract the part that is not there. (4.04)

Regular polygon: A = ½ × perimeter × apothem (center to a side) — always given. (4.03)

Notes

III. Around or inside?

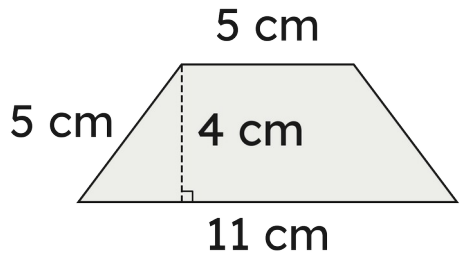
$C = \pi d = 2\pi r$ — one formula, two names. (4.06)

$A = \pi r^2$ — square the radius first, then multiply by π. (4.08)

A fraction of a circle is that fraction of its area; an answer with π in it is exact. (4.09)

Example 1

A trapezoid has bases 5 cm and 11 cm, height 4 cm, and a slanted leg of 5 cm.



Find its area.

Example 1

$$5 + 11 = 16$$

$$\frac{1}{2} \times 4 \times 16 = 32$$

Answer: 32 cm²

Your Turn

A parallelogram has base 7 cm, height 5 cm, and a slanted side of 6 cm.

Find its area.

Your Turn

A parallelogram has base 7 cm, height 5 cm, and a slanted side of 6 cm.

Find its area.

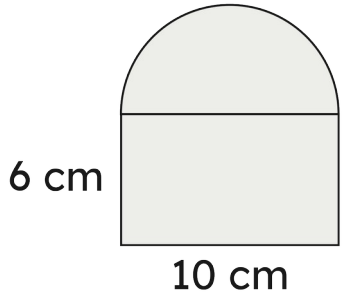
Area = base × height

$7 \times 5 = 35$

Answer: 35 cm^2

Example 2

A rectangle 10 cm by 6 cm has a semicircle on one 10 cm end.



Find the total area.

Example 2

$$10 \times 6 = 60$$

$$\frac{1}{2} \times 3.14 \times 5^2 = 39.25$$

$$60 + 39.25 = 99.25$$

Answer: 99.25 cm²

Your Turn

A circle has a diameter of 7 cm. Use 22/7 for π.

Find its area.

Your Turn

A circle has a diameter of 7 cm. Use 22/7 for π.

Find its area.

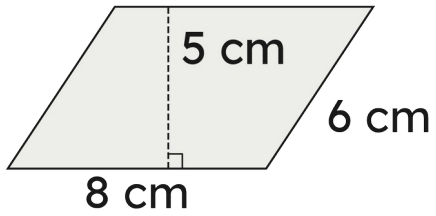
Radius: $7 \div 2 = 3.5$

$$A = \frac{22}{7} \times 3.5^2 = \frac{22}{7} \times 12.25 = 38.5$$

Answer: 38.5 cm²

Whiteboards · Question 1 of 9

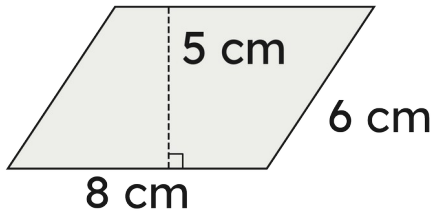
Find the area of the parallelogram.



Answer it.

Whiteboards · Question 1 of 9

Find the area of the parallelogram.



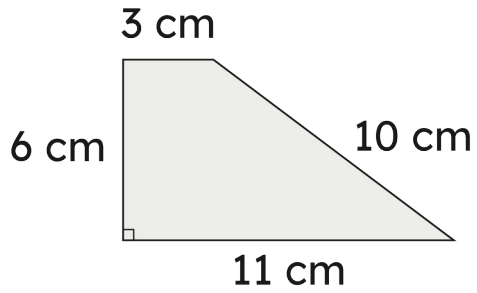
Area = base × height

$8 \times 5 = 40$

Answer: 40 cm^2

Whiteboards · Question 2 of 9

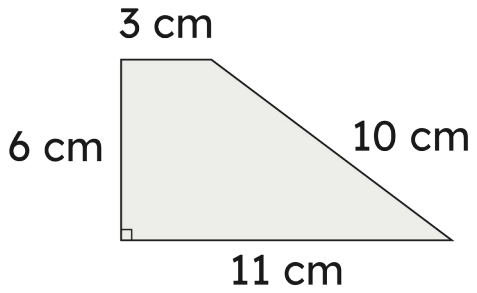
Find the area of the trapezoid.



Answer it.

Whiteboards · Question 2 of 9

Find the area of the trapezoid.



Add the bases: $3 + 11 = 14$

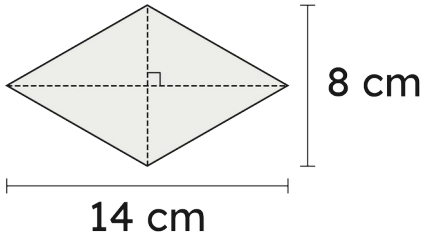
$$A = \frac{1}{2} \times 6 \times 14 = 42$$

Answer: 42 cm²

Whiteboards · Question 3 of 9

The diagonals of the rhombus are 8 cm and 14 cm.

Find its area.

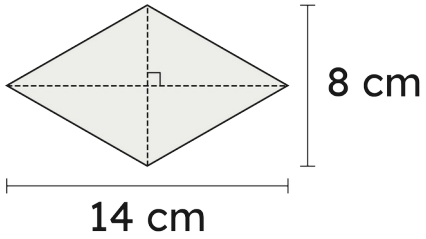


Answer it.

Whiteboards · Question 3 of 9

The diagonals of the rhombus are 8 cm and 14 cm.

Find its area.



$$A = \frac{1}{2} \times 8 \times 14 = 56$$

Answer: 56 cm²

Whiteboards · Question 4 of 9

A regular pentagon has sides of 6 cm.

The distance from its center to each side is 4.1 cm.

Which expression gives its area?

A. 30×4.1

B. $\frac{1}{2} \times 30 \times 4.1$

C. $\frac{1}{2} \times 6 \times 4.1$

D. 6×4.1

Answer it.

Whiteboards · Question 4 of 9

A regular pentagon has sides of 6 cm.

The distance from its center to each side is 4.1 cm.

Which expression gives its area?

Perimeter: $5 \times 6 = 30$

Area = ½ × perimeter × distance to a side: $\frac{1}{2} \times 30 \times 4.1$

Answer: B — ½ × 30 × 4.1

Whiteboards · Question 5 of 9

A 9 cm by 6 cm photo sits on a 13 cm by 10 cm mat.

Find the area of the mat that shows around the photo.

Answer it.

Whiteboards · Question 5 of 9

A 9 cm by 6 cm photo sits on a 13 cm by 10 cm mat.

Find the area of the mat that shows around the photo.

Mat: $13 \times 10 = 130$

Photo: $9 \times 6 = 54$

Subtract: $130 - 54 = 76$

Answer: 76 cm^2

Whiteboards · Question 6 of 9

The circumference of a circle is 25.12 cm.

Find its diameter. Use 3.14.

Answer it.

Whiteboards · Question 6 of 9

The circumference of a circle is 25.12 cm.

Find its diameter. Use 3.14.

$$d = C \div 3.14$$

$$d = 25.12 \div 3.14 = 8$$

Answer: 8 cm

Whiteboards · Question 7 of 9

A can 12 cm tall with a diameter of 7 cm rolls 20 full turns.

How far does it roll? Use 22/7 for π.

Answer it.

Whiteboards · Question 7 of 9

A can 12 cm tall with a diameter of 7 cm rolls 20 full turns.

How far does it roll? Use 22/7 for π.

One turn: $\frac{22}{7} \times 7 = 22$

20 turns: $22 \times 20 = 440$

Answer: 440 cm

Whiteboards · Question 8 of 9

A circle has a diameter of 10 cm.

What is its area?

A. 31.4 cm^2

B. 314 cm^2

C. 15.7 cm^2

D. 78.5 cm^2

Answer it.

Whiteboards · Question 8 of 9

A circle has a diameter of 10 cm.

What is its area?

Radius: $10 \div 2 = 5$

$A = 3.14 \times 5^2 = 3.14 \times 25 = 78.5$

Answer: D — 78.5 cm²

Whiteboards · Question 9 of 9

A circle's radius is tripled.

Explain what happens to its area, and why.

Write your answer in sentences.

Whiteboards · Question 9 of 9

A circle's radius is tripled.

Explain what happens to its area, and why.

Radius 2: $A = \pi \times 2^2 = 4\pi$

Radius 6: $A = \pi \times 6^2 = 36\pi$

$36 \div 4 = 9$, so the area is 9 times as large.

Answer: × 9, not × 3 — the radius is squared.

Independent Practice

1. A parallelogram has base 14 cm, height 6 cm, and a slanted side of 7 cm. Find its area.

2. A trapezoid has bases 8 cm and 12 cm and height 5 cm. Find its area.

3. A 12 cm by 7 cm rectangle has a 3 cm by 2 cm rectangle cut from one corner. Find the area left.

4. A circle has a diameter of 35 cm. Use 22/7 for π. Find its circumference.

5. A circle has a radius of 9 in. Find its area in terms of π.

6. A quarter of a circle has radius 6 cm. Find its area.

Before You Go

Which height? Which cut? Around or inside?

Two questions tomorrow are new. Make the same three decisions.

The practice test is tonight's work.

IXL

1. Open IXL and start today's skills.
2. Work on paper where the question needs work. The answer box does not show it.
3. Every skill listed is required, to a SmartScore of 60. Due by the unit test.

Today's skills — all required

Area of circles (YA8)

Circles: word problems (P56)