Lesson 5-7 · Session 1

Surface Area of Rectangular Prisms

Name _____ Date _____ Period _____

Maryland Standard 6.GR.4 · Learning target — I can find the surface area of a rectangular prism by adding the areas of its six faces.
Show a model, calculation, or explanation. Answer every part and label units when needed.

Exercises 1–12 earn 1 point for a correct response and 1 for supporting work. Spiral Review and Test Practice earn 1 point each.

Learn from a model

REMEMBER

- Surface area = the sum of the areas of all the faces of a 3-D solid.
- A rectangular prism has 3 pairs of matching faces — find one of each pair, double it, and add.
- Watch out — surface area adds areas, so the answer is in square units, not cubic units.
- Check it — a rectangular prism always gives three pairs; make sure you doubled each one.

WORKED EXAMPLE

Surface Area from a Net A rectangular prism is 9 cm long, 6 cm wide, and 4 cm tall. Find its surface area.
Step 1 Unfold it into a net. The 6 faces come in 3 matching pairs.
Step 2 Find one face from each pair. $9 \times 6 = 54$ $9 \times 4 = 36$ $6 \times 4 = 24$
Step 3 Add those three. $54 + 36 + 24 = 114$
Step 4 Each one happens twice, so double. $114 \times 2 = 228$
Answer **The surface area is 228 square centimeters (228 cm²).**

Practice

1. A box is 6 in by 4 in by 3 in. Find the area of each of the 3 different faces, then find the total surface area.

Answer _____

SHOW YOUR THINKING

2. A cube has a side length of 5 cm. Find its surface area (6 identical faces).

Answer _____

SHOW YOUR THINKING

3. Explain why a rectangular prism's surface area formula uses pairs of faces.
Sentence Frame: "I know this because..."

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

4. Work with the faces of a prism.

a. area of a face 8 cm by 5 cm _____ cm²
b. that face and its twin together _____ cm²
c. area of one square face with edges of 6 in. _____ in²
d. all six faces of that cube _____ in²

Answer _____

SHOW YOUR THINKING

5. Gift Box Wrap. A gift box is a rectangular prism 10 cm long, 8 cm wide, and 6 cm tall. Find its surface area.

Answer _____

SHOW YOUR THINKING

6. Storage Trunk. A storage trunk is a rectangular prism 9 ft long, 4 ft wide, and 3 ft tall. Find its surface area.

Answer _____

SHOW YOUR THINKING

7. Cube Cover. A cube has edges of 8 in. and will be covered on every face. Find the surface area of the cube.

Answer _____

SHOW YOUR THINKING

8. A box is 12 cm long, 5 cm wide, and 4 cm tall. Renata found 60 + 48 + 20 = 128 and stopped. Explain what she left out, then give the correct surface area.

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

9. A prism is 7 cm by 4 cm by 3 cm. Find its surface area.

Answer _____ cm²

SHOW YOUR THINKING

10. A cube has edges of 9 in. Find its surface area.

Answer _____ in²

SHOW YOUR THINKING

11. Gift Wrap. A box is 12 in. by 8 in. by 6 in. Find the surface area to work out the wrapping paper needed.

Answer _____ in²

SHOW YOUR THINKING

12. Find the Mistake. For a prism 6 by 4 by 5, Kai multiplied 6 × 4 × 5 = 120 and called it the surface area. Explain the mistake.

Answer _____ the mistake and the surface area

EXPLAIN WITH MATHEMATICAL EVIDENCE

Spiral review

13. From Lesson 5-6 Session 2. A net of 1 square and 4 triangles makes what solid?

Answer _____

SHOW YOUR THINKING

14. From Lesson 5-5 Session 2. Volume 200 m³ with base area 25 m² gives what height?

Answer _____

SHOW YOUR THINKING

15. From Lesson 4-4 Session 1. Find 50% of 128.

Answer _____

SHOW YOUR THINKING

Test practice

16. A cube with edge 6 m has surface area —

□ A. 36 m²	□ B. 216 m²
□ C. 216 m³	□ D. 144 m²

17. A prism 3 by 2 by 4 has surface area —

□ A. 26	□ B. 24
□ C. 52	□ D. 48

18. Surface area of a prism is found by adding the areas of its —

□ A. diagonals	□ B. edges
□ C. vertices	□ D. faces

Check and revise

CHECK YOUR MATHEMATICS	HOW DID IT GO?
Count each required face once. Use square units. Every part answered / Work shown / Units labeled when needed	I can do this: Independently / With a hint / With help Question to revisit: _____

One correction or question I want to discuss: _____

Check each labeled measure and required face or region. Use square units for area and cubic units for volume.