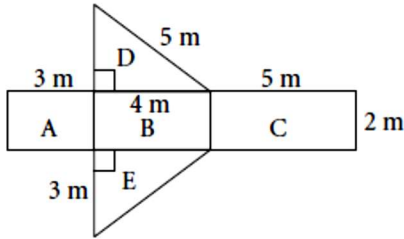# Math 8
## Lesson M2 Part 2 ~ Calculating Surface Area of Right Triangular Prisms

- Developing:

**1.** The diagram shows the net of a right triangular prism.



Calculate the area of the net.

Rectangle A has area _____ × _____ = _____

Rectangle B has area _____ × _____ = _____
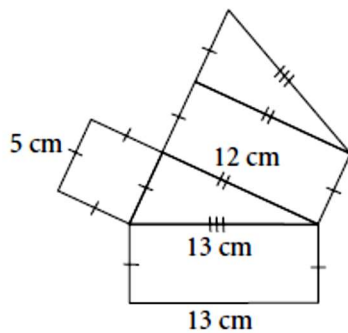
Rectangle C has area _____ × _____ = _____

Triangle D has area $\frac{1}{2}$ × _____ × _____ = _____

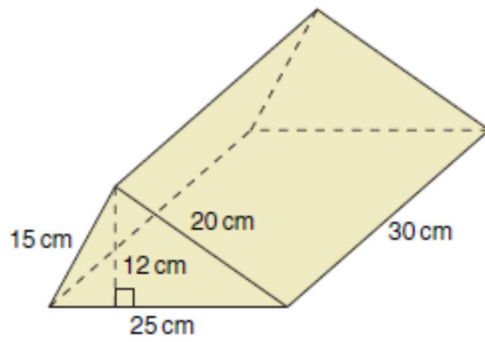Triangle E has area $\frac{1}{2}$ × _____ × _____ = _____

Area = _____ + _____ + _____ + _____ + _____ = _____

The area of the net is _____ m².
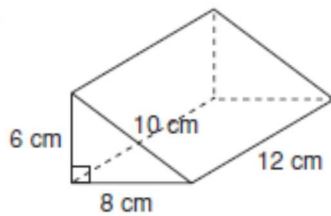
**4.** Calculate the area of the net of a prism.

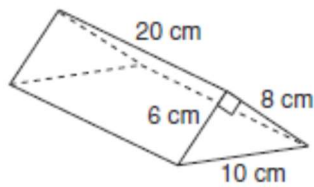**6.** Sketch a net of this triangular prism.
What is its surface area?



**9.** Find the surface area of each triangular prism.
a)



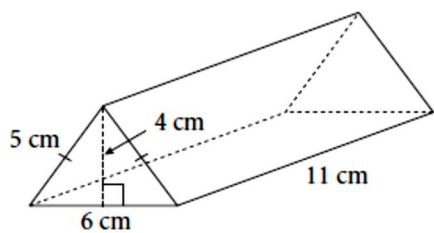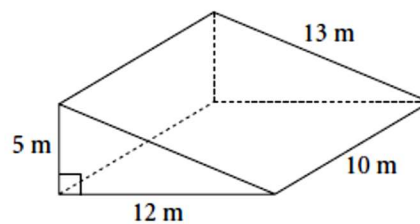**8.** Calculate the surface area of each prism.



**Prism D**

- <u>Proficient</u>:
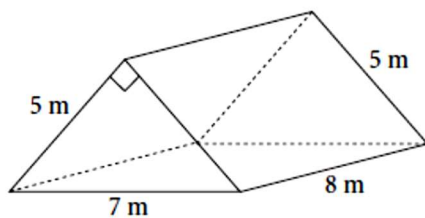
**2.** Calculate the surface area of each prism.

**a)**



5 cm   4 cm   11 cm   6 cm

**b)**



13 m   5 m   10 m   12 m
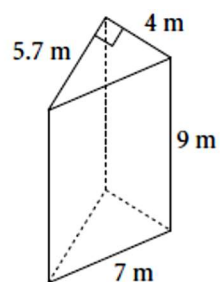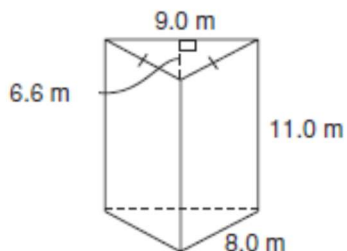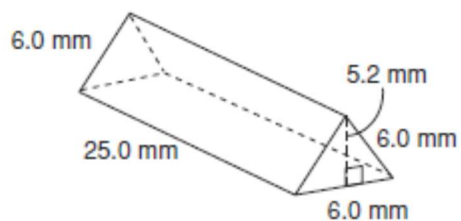
**c)**



5 m   5 m   7 m   8 m   5 m

**d)**


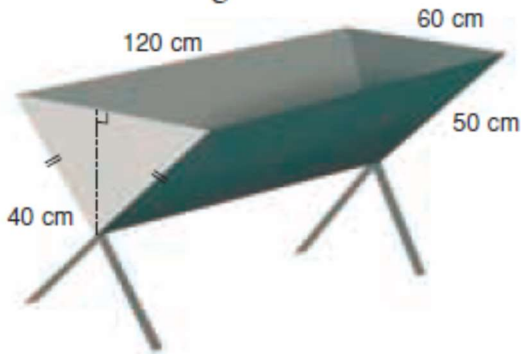
4 m   5.7 m   9 m   7 m

**9.** Find the surface area of each triangular prism.

**b)**



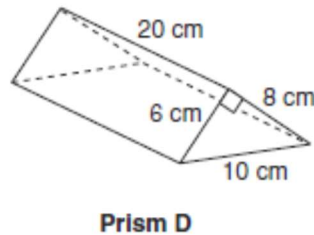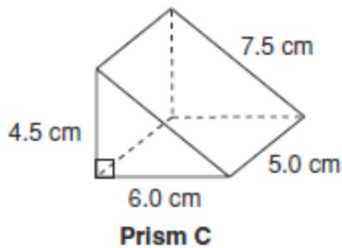9.0 m   6.6 m   11.0 m   8.0 m

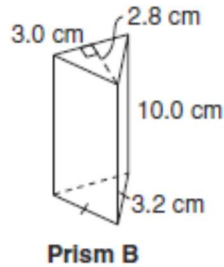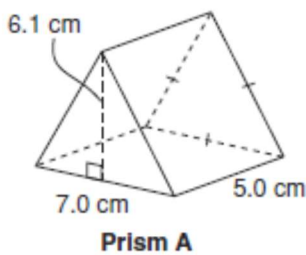**c)**



6.0 mm   5.2 mm   6.0 mm   25.0 mm   6.0 mm

**13.** How much metal is needed to build this water trough?



- <u>Extending</u>: please complete Proficient questions first
**8.** Calculate the surface area of each prism. Order the prisms from greatest to least surface area. Show your work.



**Prism A**

**Prism B**



**Prism C**

**Prism D**

**10.** The 3 rectangular faces of a triangular prism have areas 30 cm², 40 cm², and 50 cm². The 2 triangular bases have a combined area of 12 cm². What are the dimensions of the triangular prism? Explain your thinking using diagrams, numbers, and words.

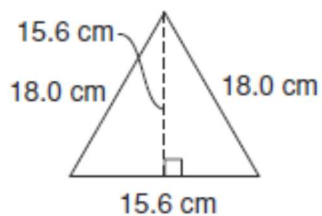**11.** Suppose you want to construct a right triangular prism 15 cm long with the greatest surface area. Which of these triangles should you choose for its base? Explain your choice.
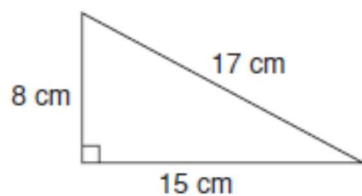
a)

12 cm
20 cm
16 cm

b)

15.6 cm
18.0 cm
18.0 cm
15.6 cm

c)

8 cm
17 cm
15 cm
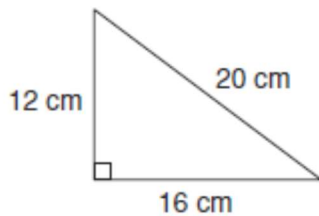
**12.** **Assessment Focus** A student said, "If you double all the dimensions of a triangular prism, you will double its surface area." Is the student correct? Use words, numbers, and diagrams to explain your answer.

16. **Take It Further** This triangle is one base of a right triangular prism. What should the length of the prism be so its surface area is between 100 cm² and 150 cm²? Show your work.
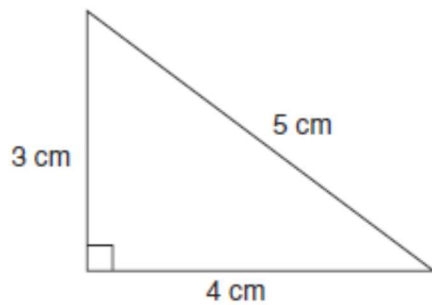


17. **Take It Further**

a) Use the Pythagorean Theorem. Find the height of a triangular base of this prism.

b) What is the surface area of the prism? Give your answer to the nearest square centimetre.