

## Characteristics of a math test for grading purposes

- ☑ The test should promote learning.
- ☑ There should be a range of difficulty of items (simple to complex).
- ☑ Item weighting should match item difficulty (simple difficulty level has lower weighting than higher difficulty level).
- ☑ The items should be representative of what was taught. [You should include a few items that concern a prior topic but you must inform students about what topic is being reassessed.]
- ☑ The items should reflect the important concepts and skills that were taught. [In other words, do not assess some obscure matter that has little or no importance in relation to what was taught.]
- ☑ The items should vary in length of response required (short response to long response).
- ☑ There should be items that assess skills, that assess concepts, that assess problem solving, and that assess a combination of skills, concepts, and problem solving.
- ☑ Some items should require explanation of thinking.
- ☑ Some items should require showing of work.
- ☑ There should be some choice allowed.
- ☑ A student's language understanding level should, as much as possible, not be a factor in the test (e.g. a low reading level of a student can be compensated for by teacher reading a question to that student). [You are assessing mathematics learning, not language comprehension.]
- ☑ The instructions should be clear.
- ☑ The answer key should reflect an open attitude towards responses that are mathematically correct but different in terms of style, approach . . . than what the teacher was expecting or taught. In other words, 'mathematically correct' is the crucial factor, not style or some other non-mathematical consideration, when determining the correctness/validity/appropriateness of a response to an item. This open attitude allows for and encourages creativity in students (a good thing, not a bad thing).

## Sample surface area test #1 for grade 8

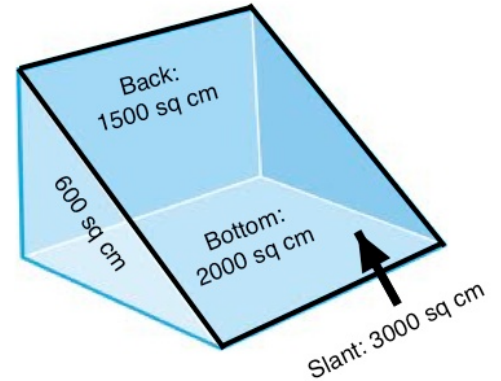
Main topic: *Surface area of right cylinder, right triangular prism, right rectangular prism*

Prior topic: *Perimeter*

### **PART A: Do all three (3) questions. (Weight = 1)**

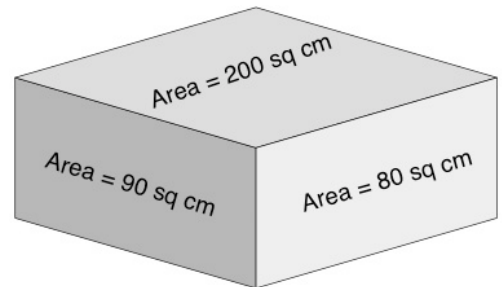
A #1

What is the surface area of the object shown on the right?



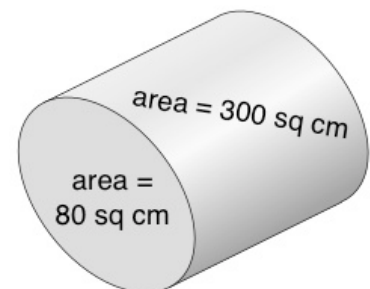
A #2

What is the surface area of the object shown on the right?



A #3

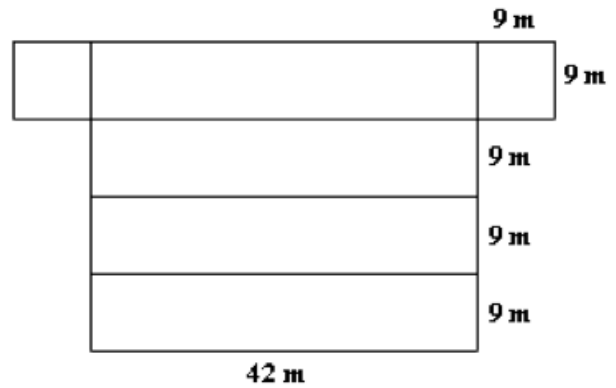
What is the surface area of the object shown on the right?



**PART B: Do two (2) of the three questions. (Weight = 1)**

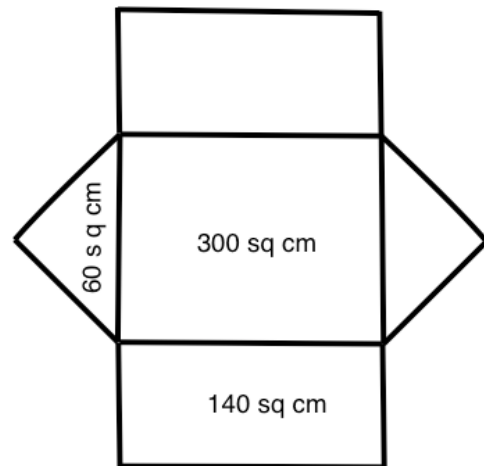
B #1

- (a) What is the surface area of the net shown on the right? Show your work.
- (b) What solid does the net represent?



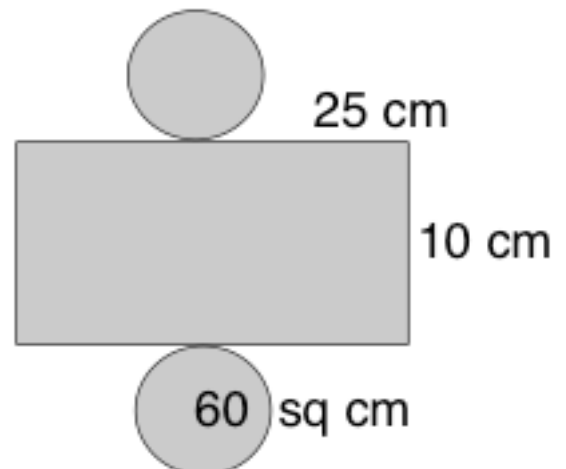
B #2

- (a) What is the surface area of the net shown on the right? Show your work.
- (b) What solid does the net represent?



B #3

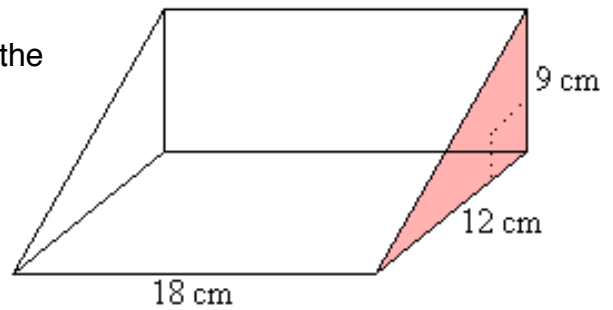
- (a) What is the surface area of the net shown on the right? Show your work.
- (b) What solid does the net represent?



**PART C: Do three (3) of four questions. (weight = 3)**

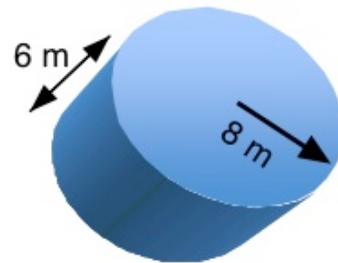
C #1

What is the surface area of the solid shown on the right? Show your work.



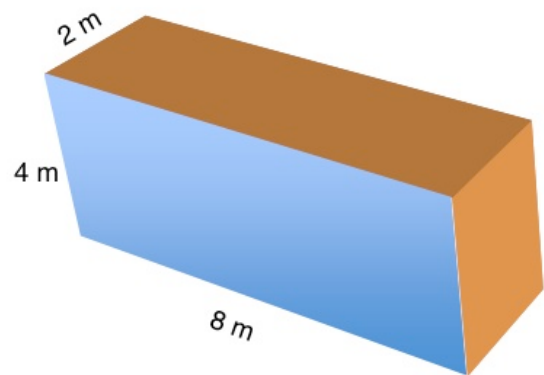
C #2

What is the surface area of the solid shown on the right? Use  $\pi = 3.1$ . Show your work.



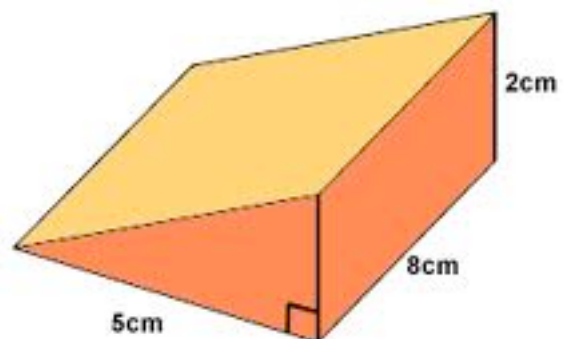
C #3

What is the surface area of the solid shown on the right? Show your work.



C #4

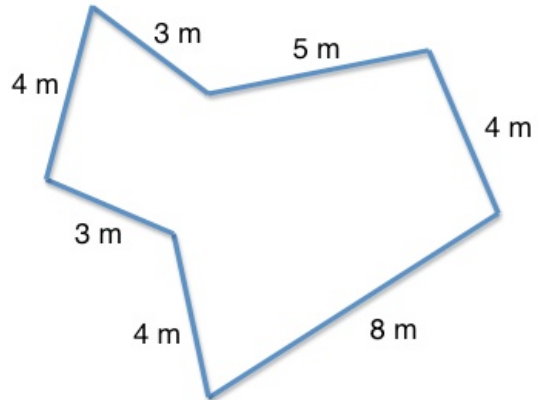
What is the surface area of the solid shown on the right? Show your work.



**PART D: Do two (2) of three questions. (weight = 2)**

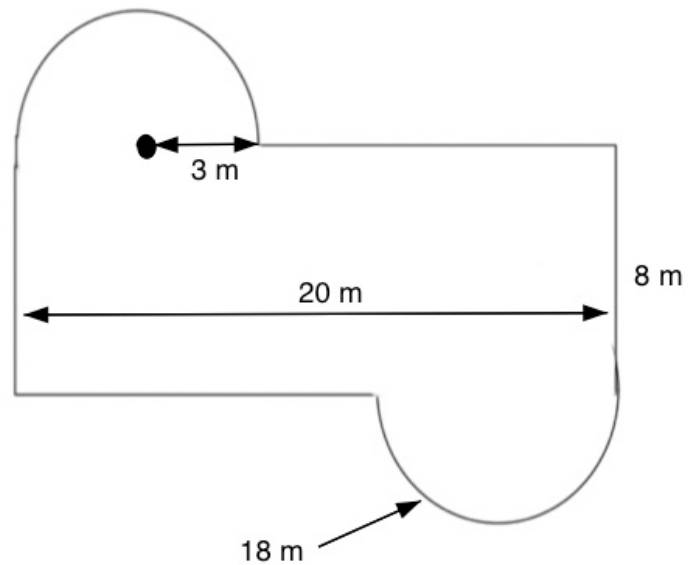
D #1

A shape is shown on the right. What is its perimeter? Explain why.



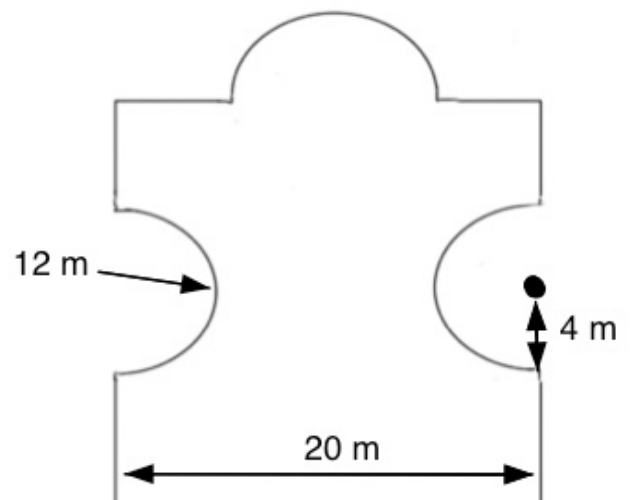
D #2

A gigantic jigsaw puzzle piece is made up of two identical semi-circles having a radius of 3 and lines from a rectangle. What is the perimeter of the piece? Show your work.



D #3

A gigantic jigsaw puzzle piece is made up of three identical semi-circles having a radius of 4 and lines from a square. What is the perimeter of the piece? Show your work.



**PART E: Do one (1) of two questions. (weight = 4)**

E #1

There are two cardboard boxes (right rectangular prisms) on a shelf, box small and box big. The dimensions of box small are: 10 cm by 20 cm by 30 cm. Each dimension of box big is five times that of box small. What is the ratio of the surface area of box big to box small? Show your work.

E #2

There are two tin cans (right cylinders) on a shelf, can small and can big. Can small has a height of 5 cm and a radius of 2 cm. The height and radius of can big are six times that of can small. What is the ratio of the surface area of can big to can small? Show your work. Use  $\pi = 3$ .

**PART F: Do two (2) of three questions. (weight = 5)**

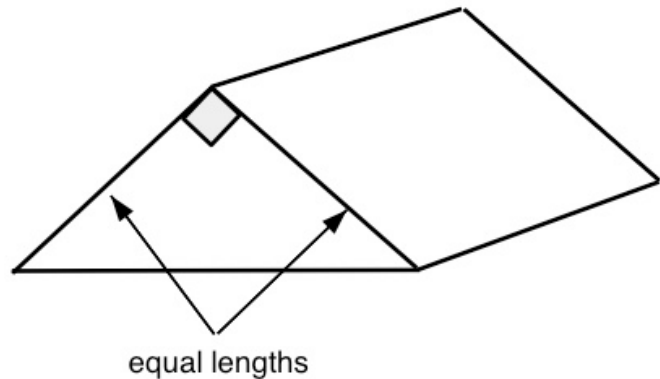
F #1

A pup tent is shaped like a right triangular prism. The right angle is at the peak of the tent. The side lengths are equal.

Canvas is used to make the roof, sides, and floor. What could be the dimensions of the tent if the total area of canvas used is 100 000 sq cm (waste is not included)?

Indicate the dimensions on the drawing of the pup tent.

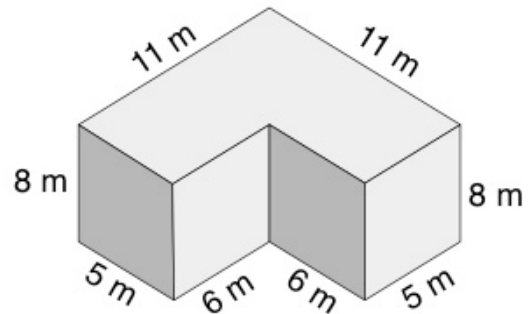
Show your work.



F #2

Find surface area of the sides and roof of the building made up of two joined right rectangular prisms. DO NOT include the floor as part of the surface area.

Show your work.



F #3

A mallet (a type of hammer) has a right cylinder for the head and a right rectangular prism for the handle (see picture). The radius of the head is 4 cm and its thickness is 5 cm. The handle is 30 cm long with a square base having a side length of 2 cm.

The head and handle are going to be spray painted. How many sq cm will be spray painted? Use  $\pi = 3$ .

Show your work.

