

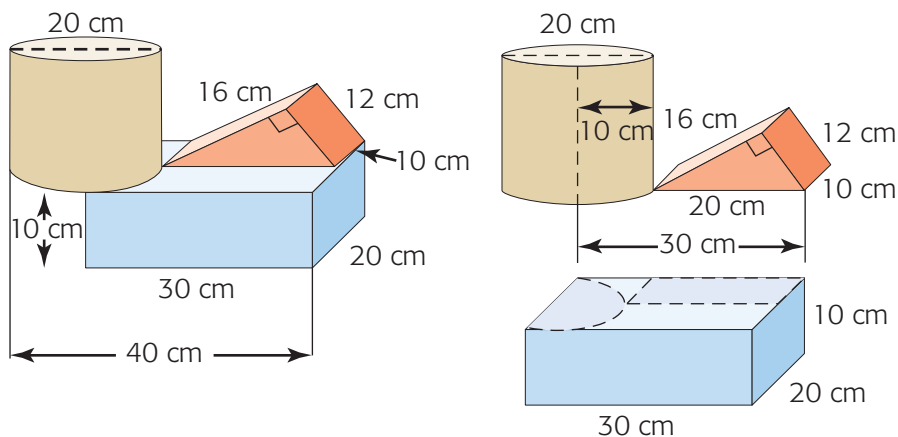
FREQUENTLY ASKED Questions

Study Aid

- See Lesson 4.4, Examples 1 and 2.
- Try Chapter Review questions 6, 7, 8, 9, and 10.

Q: How can you determine the surface area of a composite object?

A1: Subtract twice the area of overlap from the total surface area of the component parts. For example, for this object,



Total Surface Area = surface area of cylinder + surface area of triangular prism + surface area of rectangular prism $- 2(\text{area of semicircle}) - 2(\text{area of rectangle})$

A2: Calculate the visible surface area, which includes any areas you can see by turning the objects. For example, for the object above,

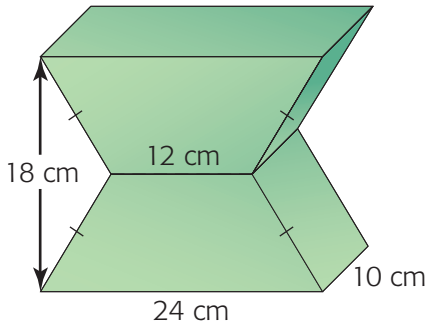
- | | |
|---|--|
| ① Visible surface area of red prism | ② Visible surface area of blue prism |
| = 2(area of triangular faces) | = 2(area of bottom + area of front + area of side) |
| + area of long rectangle | - area of semicircle |
| + area of short rectangle | - area of rectangle |
| ③ Visible surface area of cylinder | Total surface area |
| = surface area of cylinder - area of semicircle | = area 1 + area 2 + area 3 |

Practice

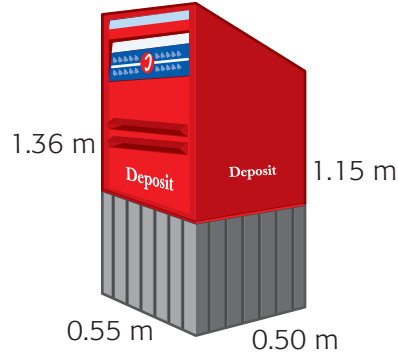
Lesson 4.2

- Sketch one way to decompose each object. Include dimensions.

a)

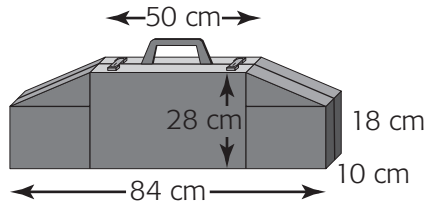


b)



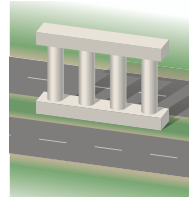
Lesson 4.3

- A case for badminton equipment is decomposed as shown. Determine the area of overlap.

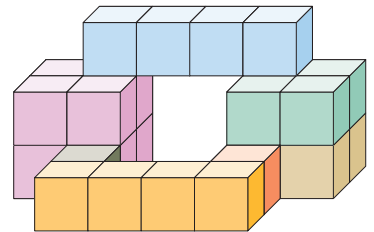
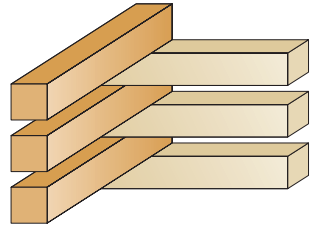


a case for badminton equipment

- The corner of a garden fence is made with six posts, as shown. Each post is 9 cm by 9 cm by 365 cm. Calculate the area of overlap.
- A support for a highway overpass is made with 2 m diameter cylindrical concrete pillars. The pillars are set between two rectangular prisms. Calculate the area of overlap of this support.

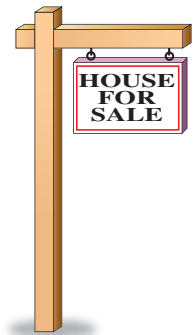
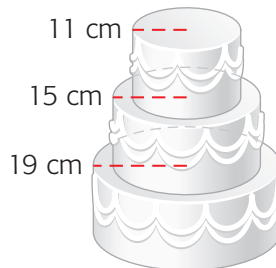


- Teresa built this structure with 2 cm cubes using different colours for each rectangular prism. Determine the area of overlap.

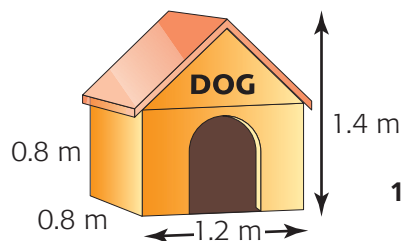
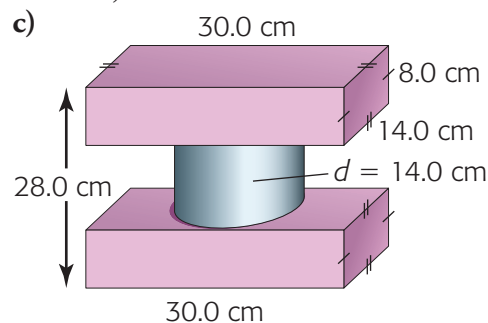
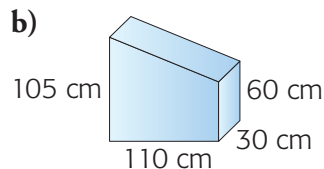
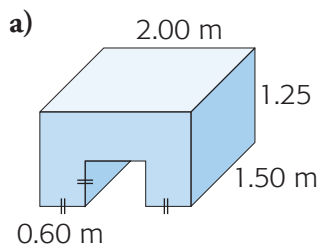


Lesson 4.4

- A “For Sale” sign is made with two posts. Each post is 9 cm square and painted brown. The vertical post stands 210 cm above ground, and the horizontal post is 70 cm long. Calculate the surface area of the posts to be painted.
- A cake is made up of three layers, each 15 cm high. The radii for the layers are 19 cm, 15 cm, and 11 cm. Determine the surface area of the decorative icing. Explain any assumptions you made.

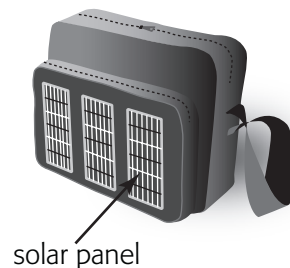


8. Determine the surface area of each object.

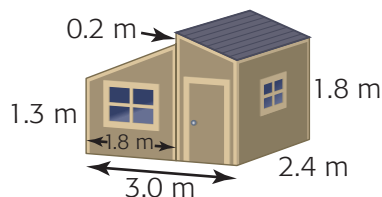


9. The roof of this doghouse has an overhang of 0.10 m on all sides. The doghouse also has a floor. Calculate the surface area of the doghouse, if the area of the doorway is 0.3 m^2 . Explain your calculations.

10. A solar laptop case provides power for a laptop computer. It is made of waterproof canvas. The main case is 43 cm by 35 cm by 9 cm, and the solar panels are attached to a pocket that is 35 cm by 25 cm by 5 cm. Calculate the total amount of canvas in the case. Explain any assumptions you made.

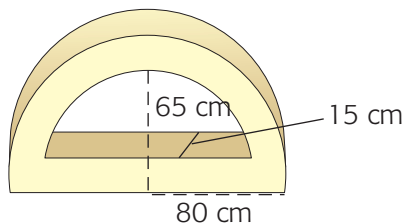


Lesson 4.5



11. Cody is building a playhouse out of plywood for his sister. It will be 2.2 m high and include the roof and floor. Calculate the total surface area of plywood Cody needs before he cuts out the windows.

12. A frame for a semicircular window is shown. Estimate the surface area of the frame. Explain what you did.



13. Morgan makes hard cases for cell phones that cover everything except the screen and the keypad. This cell phone is 16 cm long, 5.5 cm wide, and 1.4 cm thick. The screen is 5.8 cm by 4.2 cm and the keypad is 4.5 cm in diameter. Determine the surface area of the phone that the case must cover.