Knowledge/Understanding

1. Convert each measure from imperial units to metric units as indicated.
   a) 34 in.   _____ cm
   b) 13 ft   _____ m
   c) 300 yd   _____ m
   d) 2100 mi   _____ km

2. Convert each measure from metric units to imperial units as indicated.
   a) 288 m   _____ ft
   b) 525 km   _____ mi
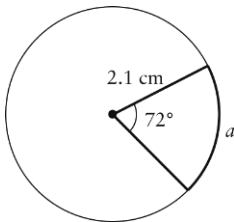   **c)** 89 cm   _____ in.
   d) 1080 m   _____ yd

3. Convert each measure from imperial units to metric units as indicated.
   a) 58 ft^2 _____ m^2
   b) 432 in.^{2} _____ cm^2
   c) 8900 yd^2 _____ m^2
   d) 75 000 mi^2 _____ km^2

4. Convert each measure from metric units to imperial units as indicated.
   a) 589 cm^2 _____ in.^{2}
   b) 12 km^2 _____ mi^2
   c) 9260 m^2 _____ yd^2
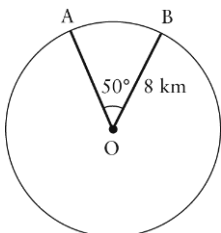   **d)** 850 m^2 _____ ft^2
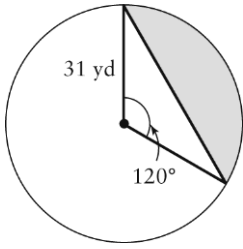
5. Determine the length of the arc, *a*.

6. Determine the measure of θ to the nearest degree.
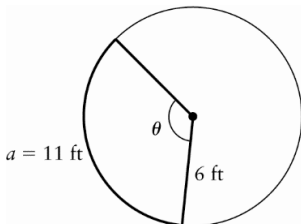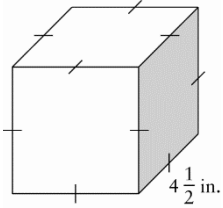

7. Calculate the area of AOB.
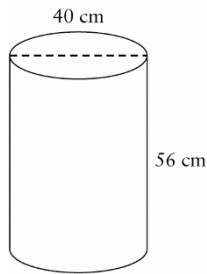
8. Determine the area of the shaded region.

31 yd

120°

9. Calculate the surface area and volume for each of the following shapes.

a)

$4\frac{1}{2}$ in.

b)

40 cm

56 cm

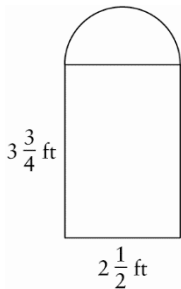**10.** A Norman window consists of a rectangular section with a semicircular part on top. Calculate the total area of the glass needed for the window.
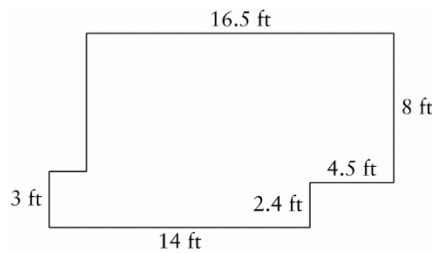

$3\frac{3}{4}$ ft

$2\frac{1}{2}$ ft

Application

11. Mohanna wants to put a new vinyl floor in her kitchen. The dimensions are shown.
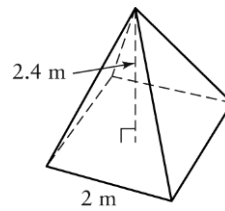   **a)** Calculate the area that will be covered.
    b) The vinyl flooring costs $2.69/ft². What will be the total cost before taxes?

```
              16.5 ft
                                    8 ft

                        4.5 ft
 3 ft              2.4 ft
         14 ft
```

**12.** A tent is in the shape of a square-based pyramid.
    a) Calculate the surface area of the tent.

2.4 m

2 m

b) How much space is inside the tent?

13. The volume of a spherical balloon is 7240 cm³. What is the radius of the balloon?

14. A circular athletic complex has a searchlight that rotates from the centre, as shown. The radius of the complex is 75 m, and the searchlight's beam forms an angle of 15°. Determine the area that is illuminated by the light at any given time.
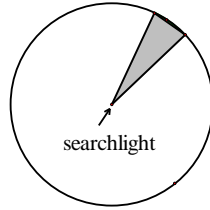
15. The sector of a circle has an area of 214 cm² and a central angle of 30°. What is the radius of the circle?

Useful formulas:

- The <u>length of an arc</u>, a, given central angle θ and radius r, is given by: $a = \frac{\theta}{360°}(2\pi r)$

- Given central angle θ and radius r, the <u>area of a sector</u>, A, is $A = \frac{\theta}{360°}(\pi r^2)$

- The <u>area of a segment</u>, given central angle θ and radius r, is given by:

$$A = \frac{1}{2}r^2\left(\frac{\pi}{180°}\theta - sin\theta\right)$$