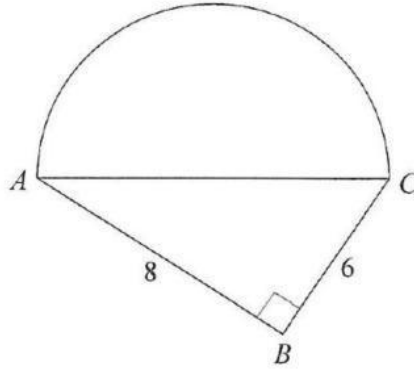


11. The template below consists of a semicircle and a right-angled triangle.

$AB = 8$ ,  $BC = 6$  and  $\angle ABC = 90^\circ$ .



Calculate, using  $\pi = 3.142$  where necessary,

- (a) the length of the diameter  $AC$ , [2]  
 (b) the area of the triangle  $ABC$ , [2]  
 (c) the area of the semicircle, [3]  
 (d) the total area of the template. [1]

11. Econo Car Rentals charges the customers for distances travelled as follows:

Fixed charge for distance of 70 km or less	Additional charge for distance over 70 km
\$62	\$1.60 per km

- (a) Determine the cost of renting a car for a distance of  
 (i) 58 km [1]  
 (ii) 136 km [3]

**Distance traveled in excess of 70 km**

**Amount paid for exceeding 70 km**

**Cost of Traveling 136 km**

After returning a car rental, a customer was charged a total of \$118.

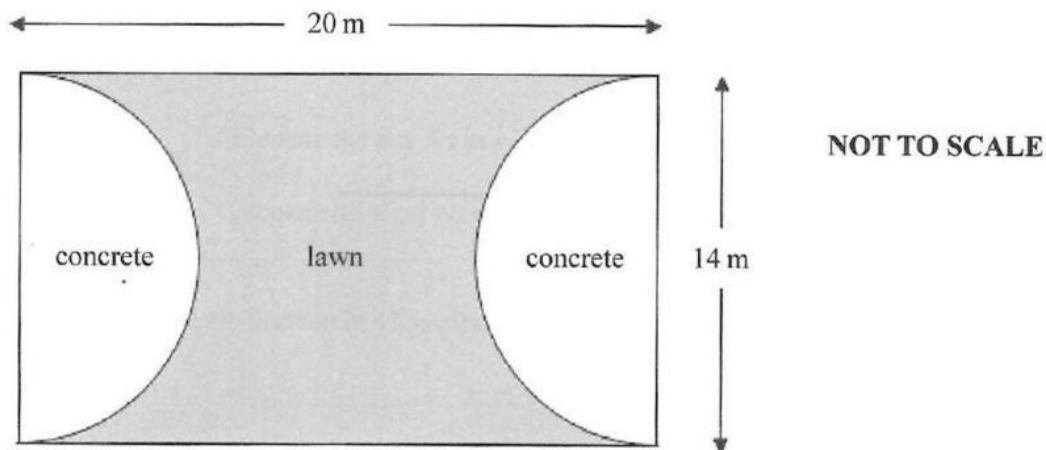
- (b) Calculate the distance travelled in the car. [3]

**Amount paid for exceeding 70 km**

**Distance traveled in excess of 70 km**

**Total Distance traveled**

11. The rectangular playground design, shown below, consists of a lawn and two equal semi-circles of concrete.



Use  $\pi = \frac{22}{7}$  where necessary in this question.

- (a) (i) Calculate the perimeter of the lawn. [2]

### Perimeters of Curved Parts

### Perimeters of Straight Parts

### Total Perimeter

- (ii) Fencing is sold at \$40.75 per metre. Calculate the cost of fencing the lawn. [2]

- (b) Calculate the area of the lawn. [3]

### Rectangular Area

### Areas of Circular Portions

### Area of Lawn

11. (a) Factorise  $63m^3n + 28mn^2 - 7mn$  [3]

- (b) Simplify:

- (i)  $3(2x - 3) - 4(x + 7)$  [3]

### Expression after removal of Brackets

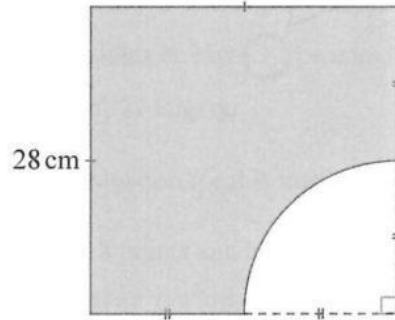
### Simplified Expression

(ii)  $\left(\frac{2p^3}{q}\right)^3$

[3]

### Simplified Fraction

11.



NOT TO SCALE

Using  $\pi = \frac{22}{7}$ , find the perimeter of the shaded region above.

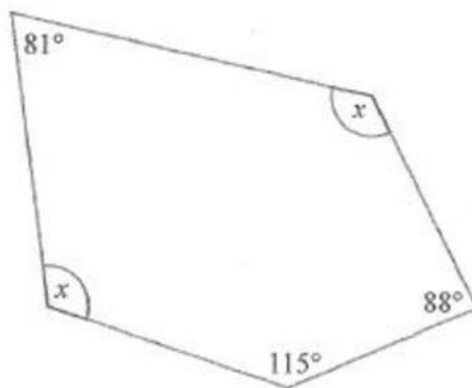
[4]

### Perimeters of Curved Parts

### Perimeters of Straight Parts

### Total Perimeter

11. (a)

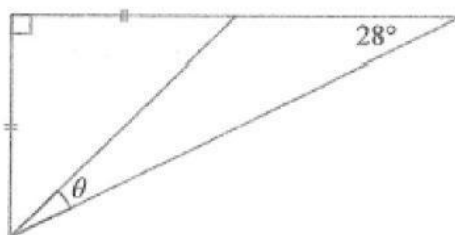


NOT TO SCALE

Given the irregular pentagon above, find the size of angle  $x$ .

[4]

(b)

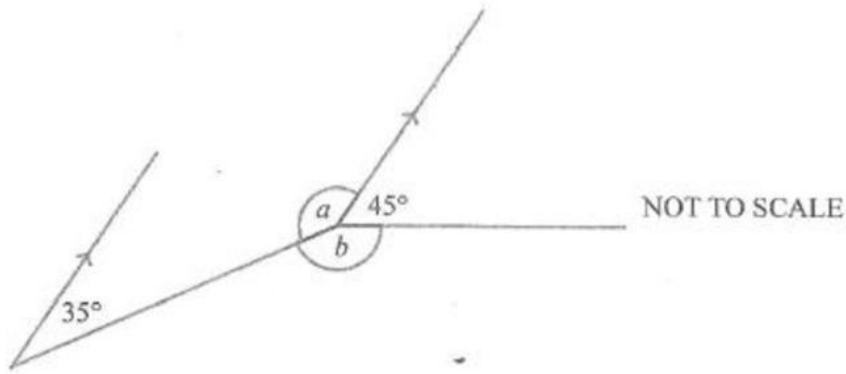


NOT TO SCALE

Find the size of angle  $\theta$  in the above diagram.

[2]

(c)



Find the sizes of angles  $a$  and  $b$  in the above diagram.

[2]

$a =$

$b =$

11.



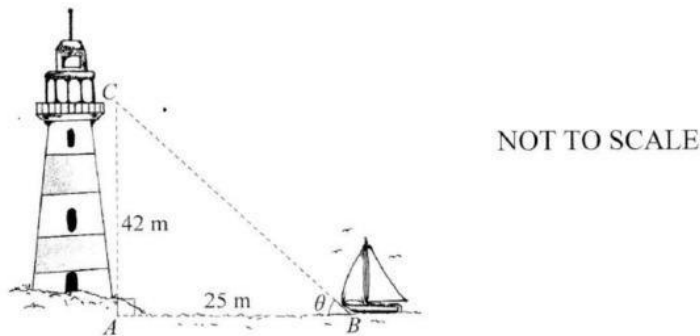
A boat ramp 1.5 m high is at a slope of  $20^\circ$ .

(a) Calculate the length ( $r$ ) of the ramp, correct to 1 decimal place.

[3]

**Trig Ratio Needed =**

**Length of Ramp =**



A boat is 25 m offshore as shown above.

C is the lookout point of the lighthouse 42 m above ground.

(b) Calculate the size of angle  $\theta$ , correct to the nearest degree.

[3]

**Trig Ratio Needed =**

**Angle of Elevation =**