

**HIGHER TIER  
MINI PRACTICE EXAM 1**

**NON-CALCULATOR  
20 MINUTES ALLOWED**

1.

(a) Factorise  $x^2 - 2x - 15$

$$(x-5)(x+3)$$

(1)

(b) Solve  $x^2 + 5x = 14$

$$\begin{aligned}x^2 + 5x - 14 &= 0 \\(x+7)(x-2) &= 0 \quad x = -7 \text{ or } 2\end{aligned}$$

(2)

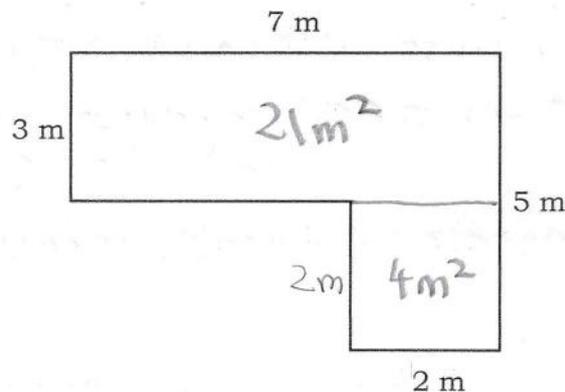
2.

Andrea is putting tiles on her kitchen floor.

60% of the floor has already been tiled.

Tiles have an area of  $2 \text{ m}^2$  and cost £2.49 each.

Below is a plan of Andrea's kitchen floor.



Work out how much it will cost Andrea to buy the tiles she needs to complete the job.

$$\text{Area of floor} = 21 + 4 = 25 \text{ m}^2$$

$$60\% \text{ of } 25 = 15 \text{ m}^2$$

$10 \text{ m}^2$  of tiles required.

$$10 \div 2 = 5$$

$$5 \times 2.49 = \underline{\underline{\pounds 12.45}}$$

(5)

3.

Pictured to the right is a cylinder.

Find the surface area of the cylinder, in terms of  $\pi$ .

$$\text{Circumference} = 10\pi$$

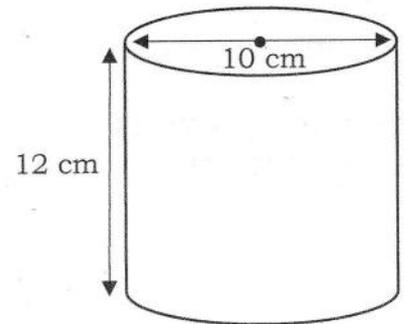
$$10\pi \times 12 = 120\pi$$

$$\text{Area} = \pi \times 5^2 = 25\pi$$

$$25\pi \times 2 = 50\pi$$

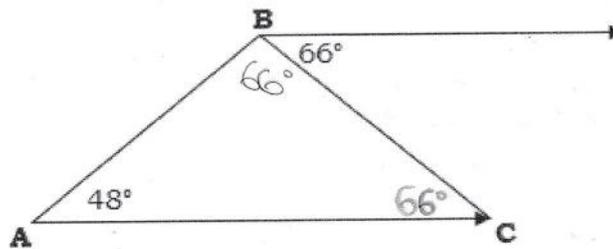
$$120\pi + 50\pi = \underline{170\pi \text{ cm}^2}$$

(4)



4.

Show that ABC is an isosceles triangle. Give reasons for each stage of your working.



$\angle BCA = 66^\circ$  because alternate angles are equal.

$\angle ABC = 180 - 48 - 66 = 66^\circ$  because angles in a triangle add to  $180^\circ$ .

ABC is an isosceles triangle because  $\angle ABC = \angle BCA$ .

(3)

5.

Ken, Lewis and Mandy drove from Bristol to Cardiff along the same route.

The distance from Bristol to Cardiff is 40 miles.

Lewis drove at an average speed of 48 miles per hour.

Ken's journey took twice as long as Lewis's journey.

Mandy's journey took 20 minutes less than Ken's journey.

Work out Mandy's average speed, in miles per hour.

$$\text{Lewis: Time} = 40 \div 48 = 5/6 \text{ hours} = 50 \text{ minutes}$$

$$\text{Ken: Time} = 50 \times 2 = 100 \text{ minutes}$$

$$\text{Mandy: Time} = 100 - 20 = 80 \text{ minutes} = 1 \frac{1}{3} \text{ hours}$$

$$\text{Speed} = 40 \div 1 \frac{1}{3}$$

$$= 40 \div \frac{4}{3}$$

$$= 40 \times \frac{3}{4} = \underline{30 \text{ miles per hour}}$$

(5)