

# M8 = 3 days to go!

3 Which of the following is the calculation to increase 2000 by 5%?

$$2000 \times 1.5$$

$$2000 \times 0.5$$

$$2000 \times 1.05$$

$$2000 \times 0.05$$

Circle the correct answer.

[1]

$$100 + 5 = 105\%$$

$$\frac{105}{100} = 1.05$$

13 A cylinder has a radius of  $(5 - \sqrt{2})$  cm and a height of  $3\sqrt{2}$  cm.

Show that the volume of the cylinder can be written as  $(81\sqrt{2} - 60)\pi \text{ cm}^3$

$$\pi r^2 \times h$$

$$r^2 = (5 - \sqrt{2})(5 - \sqrt{2}) = 25 - 5\sqrt{2} - 5\sqrt{2} + 2$$

$$r^2 = 27 - 10\sqrt{2}$$

$$\pi \times (27 - 10\sqrt{2}) \times 3\sqrt{2}$$

$$\pi \times (81\sqrt{2} - 60)$$

[4]

$$-10\sqrt{2} \times 3\sqrt{2}$$

$$-10 \times 3 \times \sqrt{2} \times \sqrt{2}$$

$$-10 \times 3 \times 2$$

$$= -60$$

The time taken,  $t$ , for passengers to be checked-in for a flight is inversely proportional to the square of the number of staff,  $s$ , working

It takes 30 minutes for passengers to be checked-in when 5 staff are working.

(a) Find an equation connecting  $t$  and  $s$ .

(b) How long would it take to check-in the passengers with 3 staff working?

$$t \propto \frac{1}{s^2}$$

$$t = \frac{k}{s^2}$$

$$30 = \frac{k}{5^2}$$

$$30 \times 25 = 750$$

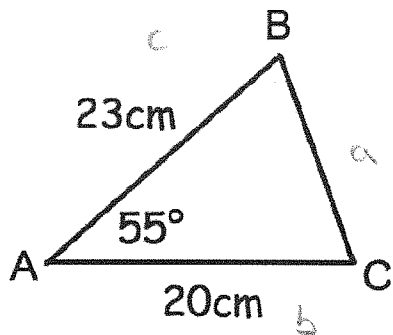
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$$a) \quad t = \frac{750}{s^2}$$

$$b) \quad t = \frac{750}{9}$$

$$t = 83.3 \text{ mins}$$

4.



Calculate the length of BC.

Cosine Rule

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$a^2 = 20^2 + 23^2 - (2 \times 23 \times 20) \cos 55^\circ$$

$$a^2 = 401.3$$

$$a = \sqrt{401.3}$$

$$a = 20.03$$

20.03 cm  
(3)