1 Work out.

(a) 5^{-2}

(a) .....[1]

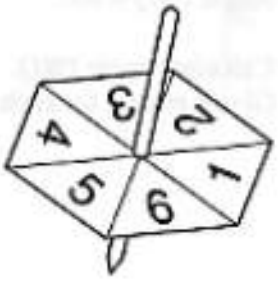
(b) $64^{\frac{1}{2}}$

(b) .....[1]

2

2 Hasna is using this fair six-sided spinner to play a game.
She spins it twice.

What is the probability she gets a 6 on **exactly** one of her spins?



.....[4]

4

3 Sally has a shelf which is 250 cm long, correct to the nearest centimetre.
She cuts off a piece which is 75 cm long, correct to the nearest centimetre.

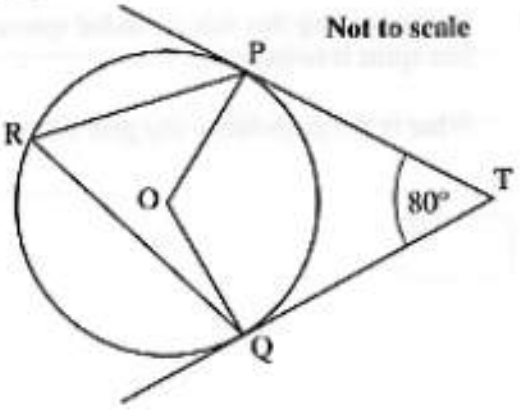
What is the upper bound of the length of the remaining piece of shelf?

.....cm [2]

2

4 PT and QT are tangents from the point T to the circle, centre O.
Angle PTQ = 80°.

Calculate angle PRQ.
Give a reason for each step in your calculation.



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.....[4]

4

5 The speed of light is $2{\cdot}998 \times 10^8 \text{ms}^{-1}$.
It takes 4·38 years for light to reach Earth from Alpha Centauri.
Jamie calculates the distance, in metres, of Alpha Centauri from Earth.
This is his calculation.

$$2{\cdot}998 \times 10^8 \times 4{\cdot}38 \times 365{\cdot}25 \times 24 \times 3600 = 4{\cdot}14 \times 10^{17}$$

Use estimation to decide whether Jamie's calculation is correct or incorrect.

Jamie's calculation is ..... because .....

.....[3]

3

6 (a) Multiply out and simplify.

$$(x - 5)(x + 6)$$

(a) .....[2]

(b) (i) Factorise.

$$x^2 - 10x + 24$$

(b)(i).....[2]

(ii) Hence simplify.

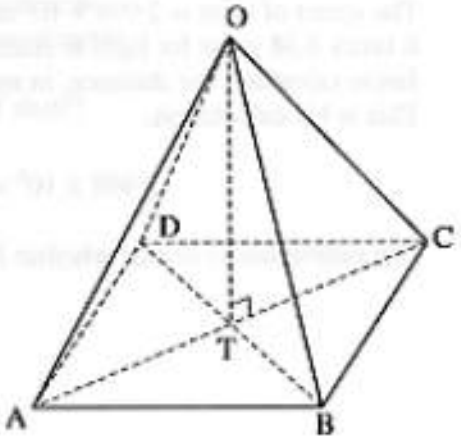
$$\frac{x^2 - 10x + 24}{x^2 - 16}$$

(ii) ..... [3]

7

7 ABCDO is a square-based right pyramid.
T is the centre of the square base.
OT = 12 cm.
AO = BO = CO = DO = 13 cm.

Show that BC = $\sqrt{50}$ cm.



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.....[3]

[3]