Frances grows plants in a container.
Each of the 5 faces of the container is made of glass.
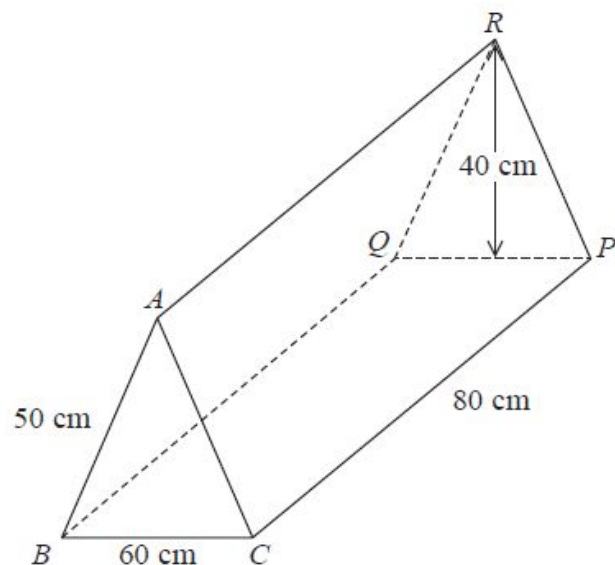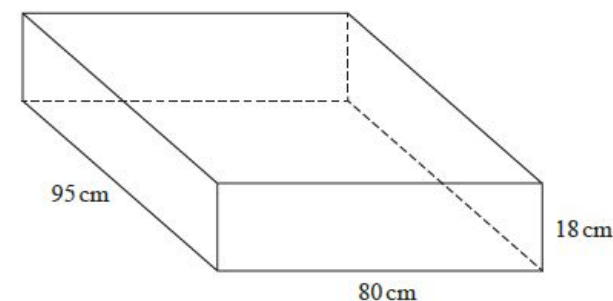
R

Diagram **NOT**
accurately drawn

40 cm

Q ------ P

A

50 cm

80 cm

B   60 cm   C

The container is in the shape of a prism.
The cross section of the prism is an isosceles triangle with height 40 cm.

$BC = 60$ cm
$AB = AC = 50$ cm
$CP = 80$ cm

Work out the total area of glass needed to make the container.

A sofa has 6 identical cushions.
Each cushion is a cuboid 18 cm by 80 cm by 95 cm.

95 cm

18 cm

80 cm

The cushions are covered with a protective spray.
The protective spray is in cans.

The label on each can has this information.

| Spray in this can covers $4 m^2$ |

(a) Work out how many cans are needed to cover the 6 cushions with protective spray.

The information on each label is inaccurate.
The spray in each can covers 10% more than 4 m².

(b) How will this affect the number of cans needed for the 6 cushions?

You must show how you get your answer.

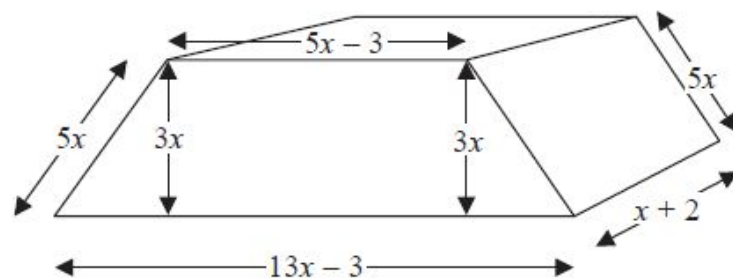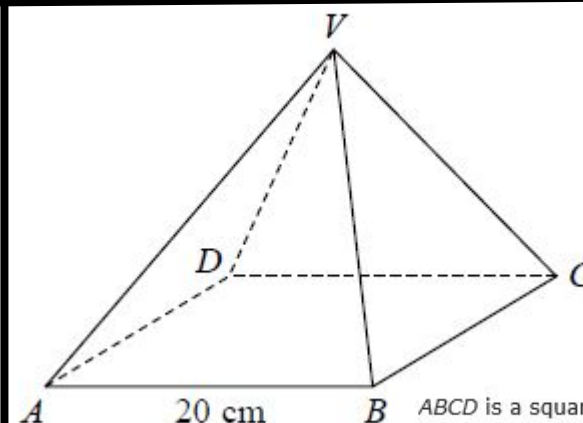* This shape is a solid prism. The cross section of the prism is a trapezium.

Diagram **NOT**
accurately drawn

$5x - 3$

$5x$

$5x$ $3x$ $3x$

$x + 2$

$13x - 3$

Show that the total surface area of the prism is $82x^2 + 32x - 12$

V

VABCD is a solid pyramid.

D

C

A   20 cm   B   *ABCD* is a square of side 20 cm.

The angle between any sloping edge and the plane *ABCD* is 55°

Calculate the surface area of the pyramid.
Give your answer correct to 2 significant figures.

Answer	Mark	Notes
15 200	3	M1 for a method to obtain at least 2 different areas from $50 \times 80 \ (= 4000), \ \frac{1}{2} \times 40 \times 60 \ (= 1200), \ 60 \times 80 \ (= 4800)$ M1 (dep on M1) for adding at least 4 correct face areas A1 cao

Question	Working	Answer	Mark	Notes
(a)		4	P1	for process to find area of at least 2 different faces, e.g. 95×18 and 80×18
			P1	for a complete process to find the surface area of one cushion, e.g. $(95 \times 18 + 80 \times 18 + 95 \times 80) \times 2$
			P1	for process to convert units, e.g. $80 \div 100 \ (= 0.8)$
			P1	(dep on P2) for their area multiplied by 6 and divided by 4
			A1	cao
(b)		Reduces (supported)	B1	for showing 4.4 is now covered or 2.93 tins or 3 tins
			C1	(dep) Statement that the number required of tins will be reduced

Working	Answer	Mark	Notes
Front or Back: ½ × 3x(13x − 3 + 5x − 3) = 27x² − 9x or ½ (4x)(3x) + 3x(5x − 3) **Top**: (5x − 3)(x + 2) = 5x² + 7x − 6 **Bottom**: (13x−3)(x + 2) = 13x² + 23x − 6 **Each Side**: 5x(x + 2) = 5x² + 10x Total SA = 2(27x² − 9x) + 2(5x² + 10x) + (5x² + 7x − 6) + (13x² + 23x − 6) = (54 + 10 + 5 + 13) x² + (−18 + 20 + 7 + 23) x + (− 6 − 6)	$82x^2 + 32x - 12$	4	M1 finds the area of at least 2 faces (condone omission of brackets) M1 writes a correct algebraic expression for the area of at least 3 different faces M1 correct expressions for all 6 faces and adds C1 (dep on M3) for correct algebraic expression as a correct summary

A1: 3H

Working	Answer	Notes
$AC^2 = 20^2 + 20^2 = 800$ $AX^2 = 10^2 + 10^2 = 200$ $\sqrt{200} \times \tan 55 = VX \ (= 20.19...)$ $VM^2 = \sqrt{"20.19"^2 + 10^2} \ (= 22.54...)$ $4 \times \frac{1}{2} \times "22.54" \times 20 + 20^2$	1300	Let X be centre of base, M be midpoint of AB P1 process to find AC or AX P1 process to find VX or VA P1 process to find height of sloping face or angle of sloping face. P1 process to find surface area of one triangular face. A1 For 1300 − 1302