Year 11 : Numeracy Paper 2 (Calculator Allowed)

Mock Exam Prep : Sheet 1

1) John buys a car for £20,000.

It depreciates in value by 15% per year.
Calculate its value after 7 years.

Value = $20\,000 \times 0.85^7$

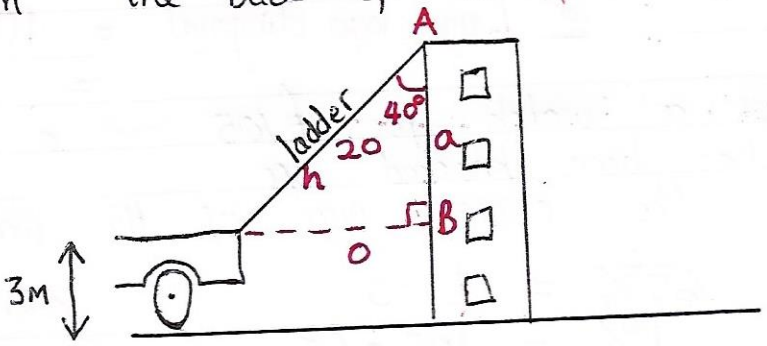
= £6,411.54

2) A rectangular piece of card has a width of 12cm measured to the nearest cm.
Calculate the maximum possible distance covered by the width of 20 cards placed side by side. Give your answer in metres.

Max width = 20×12.5

= 250cm = 2.5 m

3) The diagram shows a ladder leaning against a building from the back of a truck.



- The length of the ladder is 20m
- The angle between the ladder and the building is 40°

Calculate the height of the building.

$\cos 40^\circ = \frac{AB}{20}$

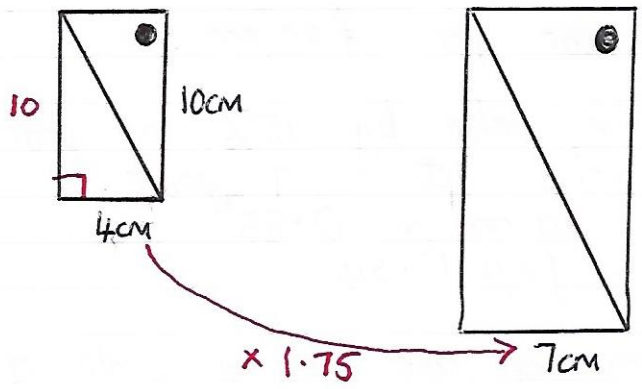
$20 \cos 40^\circ = AB$

$15.3\text{m} = AB$

∴ Height = 15.3 + 3

= 18.3 m.

4) The diagram shows 2 logos for a company. The 2 logos are SIMILAR shapes. The basic shapes are rectangles.



a) Calculate the length of the diagonal of the small logo

Pythag $h^2 = a^2 + b^2$

$h^2 = 10^2 + 4^2$

$h^2 = 100 + 16$

$h^2 = 116$

h = diagonal = 10·8 cm

b) Calculate the length of the diagonal of the large logo.

Length SF $= \frac{7}{4} = 1·75$

∴ Large logo diagonal = 10·8 × 1·75

= 18·85 cm.

5) Jessie buys a watch for £105 in a sale where 35% has been knocked off.
What was the original price of the watch?

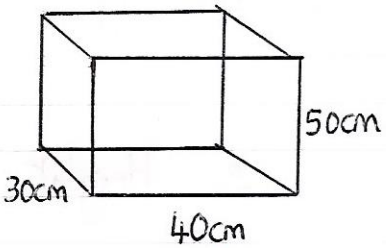
65% = £105

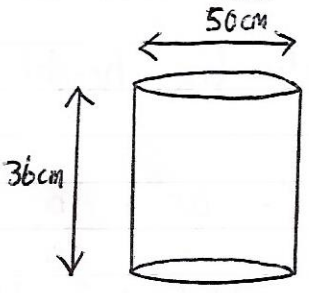
1% = 105 ÷ 65

100% = 105 ÷ 65 × 100 = £161·54

ORIGINAL PRICE

6) Which of these 2 glass tanks hold the most water and by how much.





$V = lwh$

$V = 40 \times 30 \times 50$

$V = 60\,000$ ml

$V = 60$ litres

$V = \pi r^2 h$

$V = 3·14 \times 25 \times 25 \times 36$

$V = 70\,650$ ml

$V = 70·65$ litres

cylindrical tank holds more by 10·65 litres