Added Value Unit

Part One
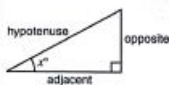
Time allowed: 20 minutes

You may **not** use a calculator for this part of the test.

1. David gets a trade discount of 20% on purchases made at his local timber store.
He buys some fence posts costing £125 before discount.
How much does David pay for the fence post after his trade discount is applied?

2. Louise recorded the cost given by six Internet sites for delivering a birthday card.
£2, £7, £5, £8, £7, £6
Find the mean of these costs.
Give your answer to the nearest penny.

3. Lisa has 36 balloons.
She sells $\frac{2}{9}$ of them.
How many balloons has she got left?

4. A decorator mixes filler with a hardening compound to repair a wall.
He mixes 2.275 kg of filler with 0.75 kg of hardening compound.
After repairing the wall, he has 0.18 kg of mixture left.
How much mixture was used to repair the wall?

5. A car travels 26.8 km on one litre of petrol.
How far will the car travel on 4 litres of petrol?

FORMULAE LIST:
Circumference of a circle: $C = \pi d$
Area of a circle: $A = \pi r^2$
Volume of a triangular prism: $V = Ah$

THEOREM OF PYTHAGORAS:
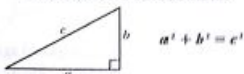
$a^2 + b^2 = c^2$

TRIGONOMETRY RATIOS IN A RIGHT-ANGLED TRIANGLE:

$\tan x° = \dfrac{\text{opposite}}{\text{adjacent}}$

$\sin x° = \dfrac{\text{opposite}}{\text{hypotenuse}}$

$\cos x° = \dfrac{\text{adjacent}}{\text{hypotenuse}}$
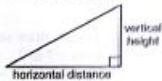
GRADIENT:

$\text{Gradient} = \dfrac{\text{vertical height}}{\text{horizontal distance}}$

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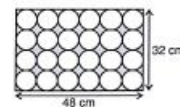
Part Two

Time allowed: 40 minutes

You may use a calculator for this part of the test.

6. Solve. (a) $7x + 3 = 2x + 28$ (b) $2(1 + 3x) = 38$

7. A rectangular sheet of pastry measures 48 cm by 32 cm.
Laura uses a circular pastry cutter to cut lids for mince pies.
The pastry cutter has a diameter of 8 cm.
Calculate the area of pastry **not** used.
Give your answer to the nearest square centimetre.

8. Patterns are made using matches.

Pattern 1   Pattern 2   Pattern 3

(a) Copy and complete the table for Pattern 4 and Pattern 5.

Pattern number	1	2	3	4	5
Number of matches	6	8	10		

(b) Here is a rule for working out the number of matches in a pattern:
"Multiply the pattern number by 2 and add 4."
How many matches are used to make Pattern 80?

9. Kelly cycles 36 kilometres in 4 hours 30 minutes.
Calculate her average speed in kilometres per hour.

10. The floor of a swimming pool slopes steadily from a depth of 1.5 m to 4.5 m. The pool is 25 m long.
Find the length of the sloping floor of the pool, CD.
Give your answer in metres, correct to 2 decimal places.
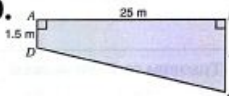
11. A ladder, 4.5 m long, is placed against the wall of a house.
The foot of the ladder is 1.6 m away from the base of the wall.
Calculate the angle, a, the ladder makes with the ground.
Give your answer correct to one decimal place.

12. On squared paper, draw and label
the x axis from -7 to 7   and   the y axis from -4 to 4.
(a) Plot the points: $A(-6, -2)$, $B(-3, 3)$ and $C(6, 3)$.
(b) $ABCD$ is a parallelogram.
Plot the position of point D on your graph.