N5 Lifeskills Mathematics

Practice Exam 4

Non Calculator

1. Evaluate

   $$6\cdot04 + 3\cdot72 \times 20.$$

   2

2. Evaluate

   $$3\tfrac{1}{6} \div 1\tfrac{2}{3}.$$

   2

3. There are 400 people in a studio audience.
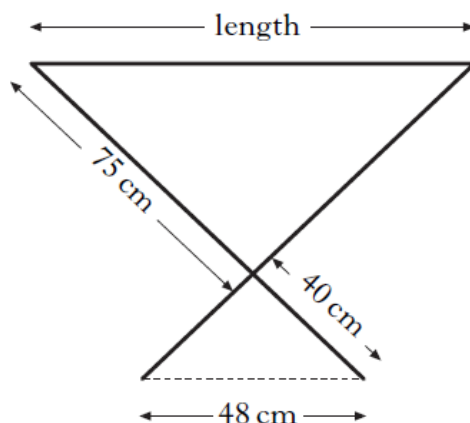
   The probability that a person chosen at random from this audience is male is $\tfrac{5}{8}$.

   How many males are in this audience?

   2

4. Mick needs an ironing board.

   He sees one in a catalogue with measurements as shown in the diagram below.

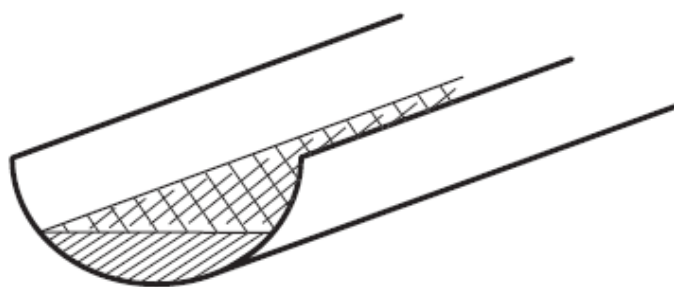   When the ironing board is set up, two similar triangles are formed.

   Mick wants an ironing board which is at least 80 centimetres in length.

   Does this ironing board meet Mick's requirements?
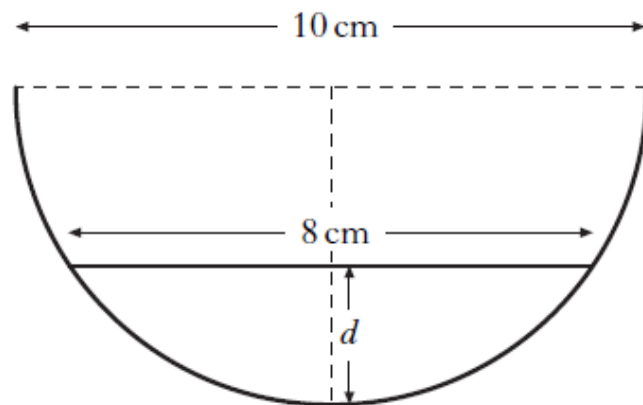
   Show all your working.

   3

5.   The diagram shows water lying in a length of roof guttering.

The cross-section of the guttering is a semi-circle with diameter 10 centimetres.

The water surface is 8 centimetres wide.

Calculate the depth, d, of water in the guttering.

Calculator

1. Alistair buys an antique chair for £600.

   It is expected to increase in value at the rate of 4·5% each year.

   How much is it expected to be worth in 3 years?

   3

2. (a) During his lunch hour, Luke records the number of birds that visit his bird-table.

   The numbers recorded last week were:

   $$28 \quad 32 \quad 14 \quad 19 \quad 18 \quad 26 \quad 31.$$

   Find the mean and standard deviation for this data.

   4

   (b) Over the same period, Luke's friend, Erin also recorded the number of birds visiting her bird-table.

   Erin's recordings have a mean of 25 and a standard deviation of 5.

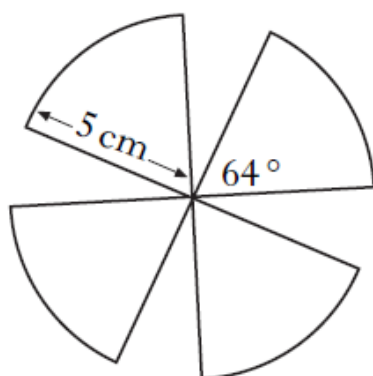   Make **two** valid comparisons between the friends' recordings.

   2

3. Mark takes some friends out for a meal.

   The restaurant adds a 10% service charge to the price of the meal.

   The **total** bill is £148·50.

   What was the price of the meal?

   3

4. To make "14 carat" gold, copper and pure gold are mixed in the ratio 5:7.

   A jeweller has 160 grams of copper and 245 grams of pure gold.

   What is the maximum weight of "14 carat" gold that the jeweller can make?

   3

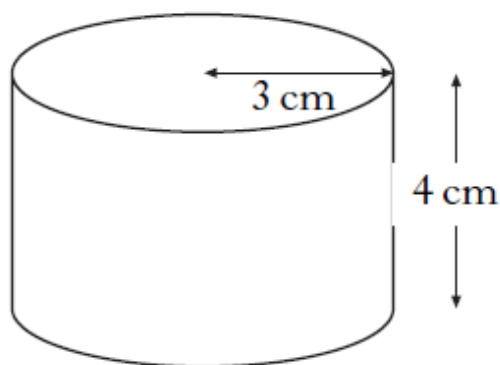5. A fan has four identical plastic blades.

Each blade is a sector of a circle of radius 5 centimetres.

The angle at the centre of each sector is $64°$.

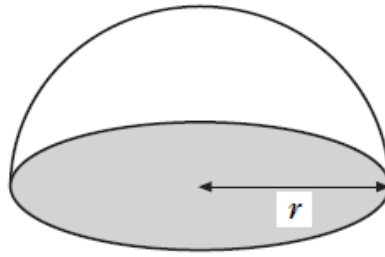Calculate the **total** area of plastic required to make the blades.   **3**

6. (a) A cylindrical paperweight of radius 3 centimetres and height 4 centimetres is filled with sand.

3 cm

4 cm

Calculate the volume of sand in the paperweight.

2

(b) Another paperweight, in the shape of a hemisphere, is filled with sand.

It contains the same volume of sand as the first paperweight.

Calculate the radius of the hemisphere.

[The volume of a hemisphere with radius r is given by the formula, $V = \frac{2}{3}\pi r^3$].

3

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Non- Calculator

Question	Marking Scheme	Evidence
1.	ANS :80.44 • Know to multiply first • Complete calculation	• 3.72 x 20 = 74.4 • 74.4 + 6.04 = 80.44
2.	ANS : $1\frac{9}{10}$ • Start to divide fractions • Multiply fractions and simplify	• $\frac{19}{6}$ x $\frac{3}{5}$ • $\frac{57}{30} = 1\frac{9}{10}$
3.	ANS :250 males • Know to divide by 8 • Know to multiply by 5	• 400/8 = 50 • 50 x 5 = 250
4.	ANS :yes, 94cm > 80cm • Calculate scale factor • Know how to find length • Calculate length • Conclusion with justification	• 75/40 = 1.875 • 1.875 x 48 • 94 • Yes because 94cm > 80cm
5.	ANS :2cm • Identify radius • Know to use Pythagoras • Complete Pythagoras • Calculate depth	• 5cm • 5^2 - 4^2 • 3 • 5 – 3 = 2cm

Calculator

1.	ANS : £684.70 • Know to increase by 4.5% • Calculate value • Round to nearest penny	• 1.045 • 600 x 1.045 = 684.699… • £684.70
2.(a)	ANS : mean 24, S.d 7 • Know how to calculate mean • Calculate $(x - \bar{x})^2$ • Substitute into formula • Calculate standard deviation	• (28 +32 +14 +19 +18 +26 +31)/7 = 24 • 16,64,100,25,36,4,49 • $\sqrt{294/7}$ • 7
(b)	ANS : two valid statements • Statement about mean • Statement about s.d	• On average more visited Erin's table (higher mean) • S.d for Erin was lower so number of birds each day is more consistent
3.	ANS : £135 • Know what % total bill is of price of	• 110

	meal • Know how to calculate price of meal • Calculate price of meal	• 148.5/110 x 100 • £135
4.	ANS : 384g • Calculate weight of 1 part • Calculate weight of gold used • Calculate total weight	• 160 / 5= 35 • 35 x 7 = 224 • 160 + 224 = 384g
5.	ANS :55.85 cm^2 • Know to find angle of sector • Find area of sector • Find total area of blades	• 64/360 or equivalent • $\pi \times 5^2 \times 64/360$ • 4 x 13.96… = 55.85cm^2
6.(a)	ANS :113.1 cm^3 • Substitute values correctly • Calculate volume	• $\pi \times 3^2 \times 4$ • 113.1 cm^3
(b)	ANS :3.78cm • Substitute values correctly • Start to evaluate • Complete evaluation for r	• $113.1 = \frac{2}{3} \times \pi \times r^3$ • $r^3 = 113.1 / \pi \times (3/2)$ • $r = \sqrt[3]{54} = 3.78$ cm