National 5 Mathematics
Homework
Prelim Revision - Jan 2017

NON-CALCULATOR QUESTIONS

1. Evaluate $6\frac{1}{5} - 2\frac{1}{3}$. 2

2. Solve **algebraically** the inequality 3

$$2y < 3 - (y + 6).$$

3. The standard deviation of 1, 2, 2, 2, 8 is equal to $\sqrt{a}$. 3

Find the value of a.

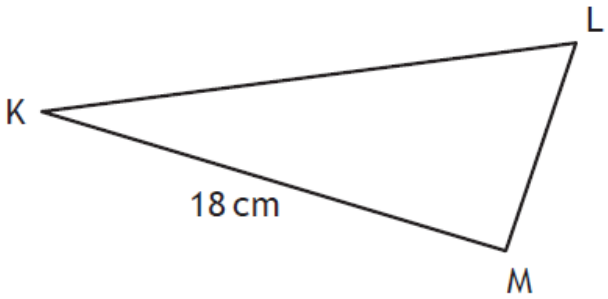
4. Find the equation of the line joining the points $(-2, 5)$ and $(3, 15)$.

Give the equation in its simplest form. 3

5. In triangle KLM

- KM = 18 centimetres
- sin K = 0·4
- sin L = 0·9

Calculate the length of LM.



3

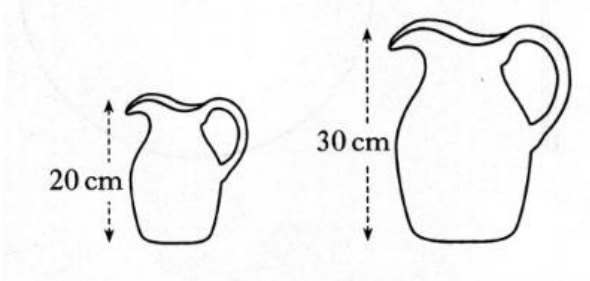
6. Change the subject of the formula to b. $A = \sqrt{4b^2 - c}$ 3

CALCULATOR QUESTIONS

1. The diagram shows two jugs which are mathematically similar.

The volume of the smaller jug is 0.8 litres.

Find the volume of the larger jug.



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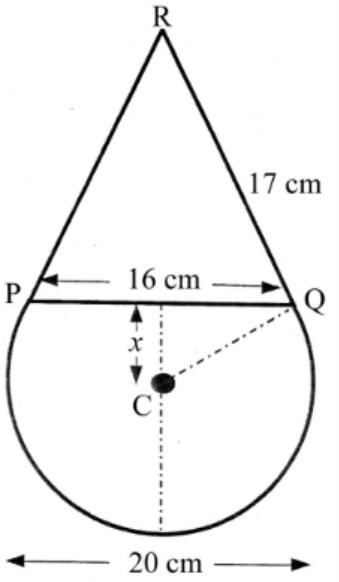
2. A clown's face consists of an isosceles triangle PQR on top of a sector of a circle.



The diameter of the circle is 20 centimetres.

The base of the triangle is 16 centimetres and its sloping sides are 17 centimetres long.

a) Calculate x, the distance in centimeters from the centre of the circle to the base of the triangle. 3

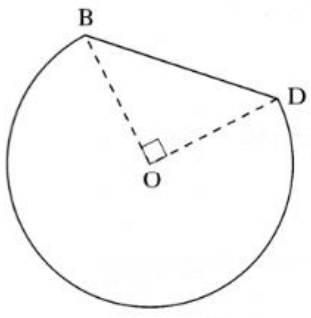
b) Calculate the total height of the figure. 3

3. The diagram shows a table whose top is in the shape of part of a circle with centre, O, and radius 60 centimetres.

BD is a straight line.

Angle BOD is 90°.

Calculate the perimeter of the table top. 3



4. a) 4 peaches and 3 grapefruit cost £1.30
Write down an algebraic equation to illustrate this. 1

b) 2 peaches and 4 grapefruit cost £1.20.
Write down an algebraic equation to illustrate this. 1

c) Find the cost of 3 peaches and 2 grapefruit. 4

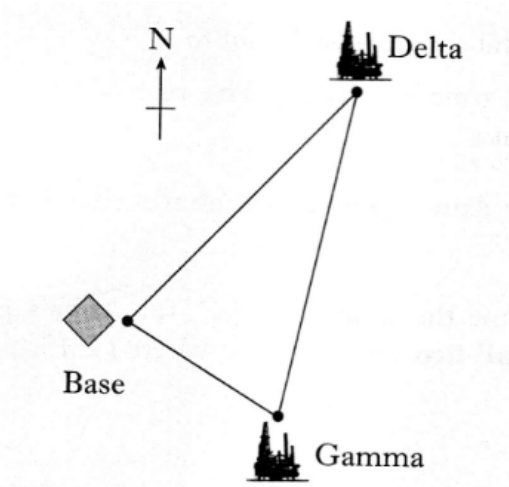
5. The diagram shows the position of a helicopter base and two oil rigs, Delta and Gamma.

From the helicopter base, the oil rig Delta is 35 kilometres away on a bearing of 050°.

From the same base, the oil rig Gamma is 20 kilometres away on a bearing of 125°.

Calculate the distance between Delta and Gamma.

Do not use a scale drawing.



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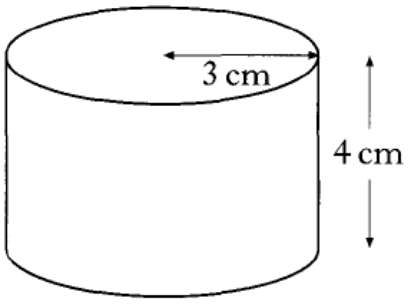
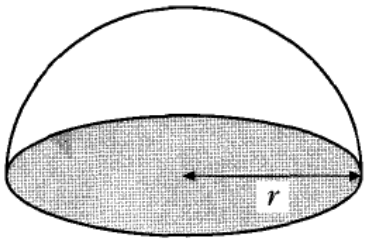
6. (*a*) A cylindrical paperweight of radius 3 centimetres and height 4 centimetres is filled with sand.



Calculate the volume of sand in the paperweight.

(*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, $V = \frac{2}{3}\pi r^3$].