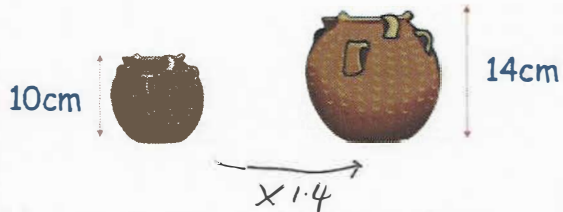


31st March



Corbettmaths

Mrs Hampton is potting plants. She is using two mathematically similar pots, the smaller is 10cm tall and the larger 14cm tall. She has two bags of soil, each containing 30 litres of soil.



With the first bag, Mrs Hampton fills 20 small pots using all of the soil in the bag.

How many large pots can be filled completely using the second bag of soil?

$$30 \div 20 = 1.5 \text{ litres}$$

$$1.5 \times 1.4^3 = 4.116 \text{ L}$$

$$30 \div 4.116 = 7.28...$$

7

Make m the subject

$$y = \frac{m+4}{m+5}$$

$$y(m+5) = m+4$$

$$ym + 5y = m+4$$

$$ym - m = 4 - 5y$$

$$m(y-1) = 4 - 5y$$

$$m = \frac{4 - 5y}{y - 1}$$

The point (5, 12) lies on a circle with centre (0, 0)

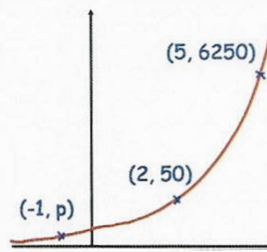
$$r = 13$$

Write down the coordinates of another three points on the circle.

$$\sqrt{5^2 + 12^2} = 13$$

- (0, 13)
- (0, -13)
- (13, 0)
- (12, 5)
- (-5, -12)
- (-12, 5)
- (-13, 0) etc

The sketch shows a curve with equation $y = ab^x$ where a and b are constants and $b > 0$



The curve passes through the points (2, 50), (5, 6250) and (-1, p)

$$50 = ab^2$$

$$6250 = ab^5$$

Calculate the value of p

$$b^3 = 125$$

$$b = 5$$

$$a = 2$$

$$y = 2 \times 5^x$$

$$p = 2 \times 5^{-1}$$

$$p = \frac{2}{5}$$