



Prove that the sum of four consecutive whole numbers is always even.

$$n + (n+1) + (n+2) + (n+3)$$

$$= 4n + 6$$

The first five terms of a quadratic sequence are

-7 -1 9 23 41

Find the nth term

$$2a = 4$$

$$a = 2$$

$$3a + b = 6$$

$$b = 0$$

$$a + b + c = -7 \quad c = -9$$

-7 -1 9 23 41
6 10 14 18
4 4 4

$$2n^2 - 9$$

An object has a mass of 120kg, correct to two significant figures. 115000g

The density of the material it is made from is 8.4g/cm³, correct to one decimal place.

8.45

Work out the smallest possible volume of the object. Give your answer to three significant figures.

$$13600 \text{ cm}^3$$

$$\text{Min } V = \frac{\text{min Mass}}{\text{max Density}}$$

$$= \frac{115000}{8.45}$$

$$= 13609.4 \dots \text{ cm}^3$$

Julie puts some white, pink and green counters into an empty box.

The ratio of white to pink to green counters is 1:3:1. $x : 3x : x$

Julie takes at random, 2 counters from the box, one at a time, without replacement.

The probability that she takes two white counters is $\frac{3}{95}$

How many white counters did Julie put in the box?

$$\frac{1x}{5x} \times \frac{x-1}{5x-1} = \frac{3}{95}$$

$$\frac{x-1}{25x-5} = \frac{3}{95}$$

$$95x - 95 = 75x - 15$$

$$20x = 80$$

$$x = 4$$

4

$$f(x) = \frac{5x + 2}{6}$$

Find $f^{-1}(x)$

$$y = \frac{5x + 2}{6}$$

$$6y = 5x + 2$$

$$6y - 2 = 5x$$

$$x = \frac{6y - 2}{5}$$

$$f^{-1}(x) = \frac{6x - 2}{5}$$