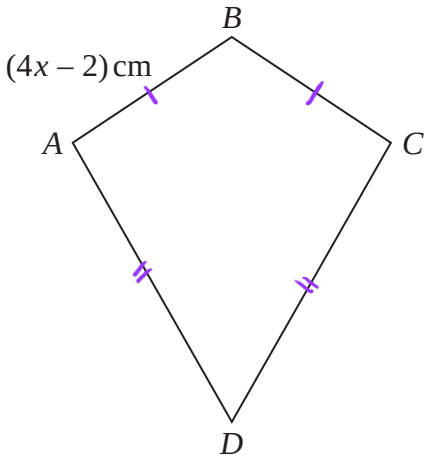
1 *ABCD* is a kite.



Based on what we know about the properties of a kite:

AB = BC

AD = CD

$AB = (4x - 2)$ cm

Jasper says that x could be 0.5

(a) Explain why Jasper cannot be correct.

AB = (4(0.5) - 2) cm = 2 - 2 = 0 cm

Length of AB cannot be 0. (1)

substitute the value of x into the equation

(1)

$AD = 3AB$

The kite has a perimeter of 64 cm.

(b) Find the value of x.

AD = 3(4x - 2)

= 12x - 6 (1)

Perimeter = AB + BC + CD + AD

= 2AB + 2AD (because AB = BC and CD = AD)

64 = 2(4x - 2) + 2(12x - 6) (1)

64 = 8x - 4 + 24x - 12

64 = 32x - 16

80 = 32x

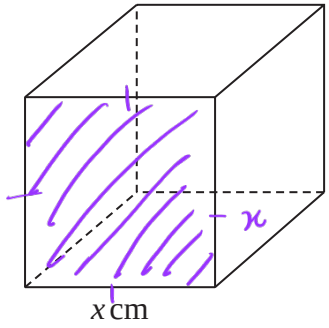
$x = \frac{80}{32} = 2.5$ (1)

$x =$ 2.5

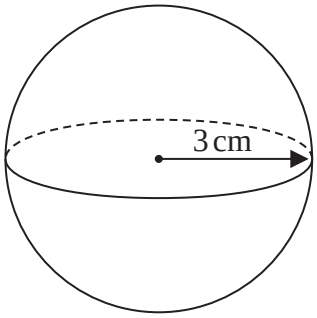
(3)

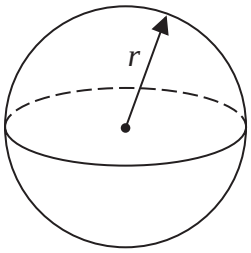
(Total for Question 1 is 4 marks)

2 The diagram shows a cube with edges of length x cm and a sphere of radius 3 cm.



6 surface





Surface area of sphere = $4\pi r^2$

The surface area of the cube is equal to the surface area of the sphere.

Show that $x = \sqrt{k\pi}$ where k is an integer.

total surface × area of 1 surface = $6 \times x^2$

Surface area of cube $= 6x^2$ cm^2 (1)

Surface area of sphere $= 4\pi (3\text{ cm})^2$ $r = 3$ cm

$= 4\pi (9\text{ cm}^2)$

$= 36\pi$ cm^2 (1)

Surface area of cube = surface area of sphere

$6x^2 = 36\pi$ (1)

$x^2 = 6\pi$

$x = \sqrt{6\pi}$, where $k = 6$

$x = \sqrt{k\pi}$ (1)

(Total for Question 2 is 4 marks)

3 There are x sweets in a box.

There are y sweets in a packet.

(c) Write an expression, in terms of x and y, for the total number of sweets in 3 boxes and 2 packets.

2 packets of sweets = $2y$

3 boxes of sweets : $3x$ (1)

Total number of sweets : $3x + 2y$ (1)

$3x + 2y$

(2)

(Total for Question 3 is 2 marks)