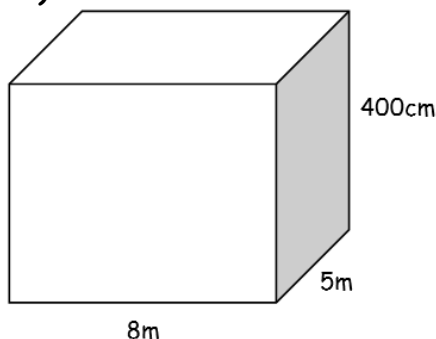## Volume of cubes and cuboids: Problem solving

1) Miss Suleiman just bought a new fridge with a base of 30 cm, a breadth of 45cm and a height 120 cm. What is the volume of the fridge?

2) A cuboid has a base length of 30m a height of 16m and a breadth of 10m. What is the volume of the cuboid?

3) A cube shaped box has a side length of 3mm. What is the volume of the box?

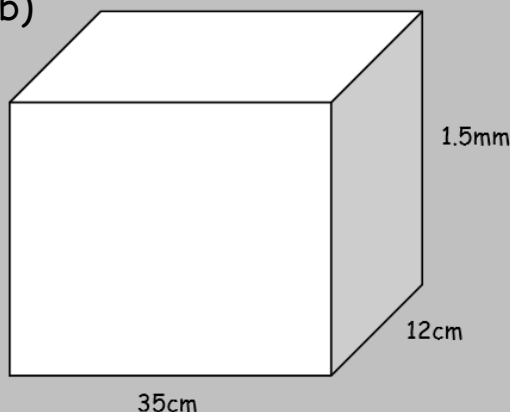4) A rubix cube has a side length of 10cm. What its volume?

HOT

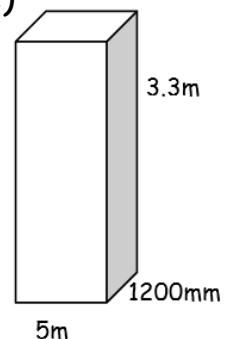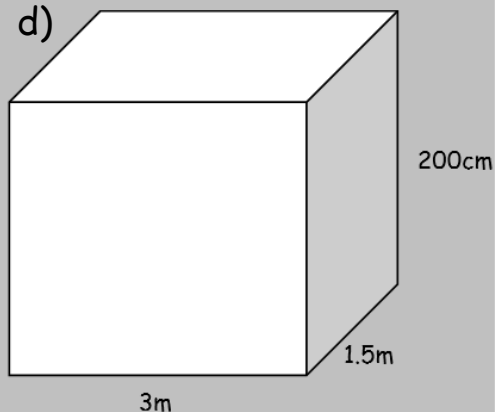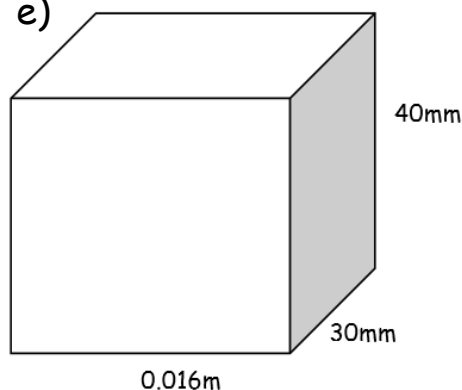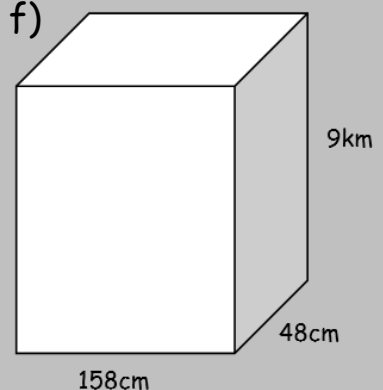5) Work out the volume of each cuboid. (Remember to convert units where appropriate)

a)
400cm
5m
8m

b)
1.5mm
12cm
35cm

c)
3.3m
1200mm
5m

d)
200cm
1.5m
3m

e)
40mm
30mm
0.016m

f)
9km
48cm
158cm
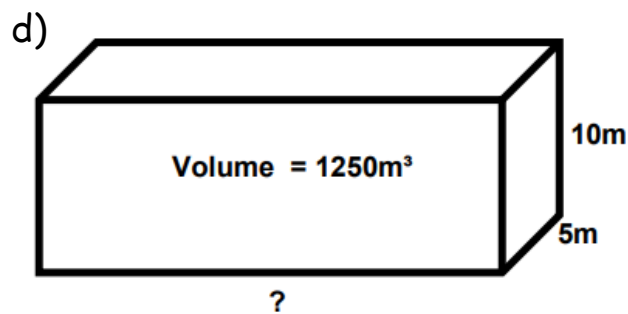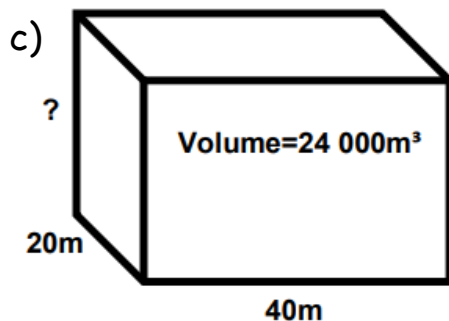
6) For each cuboid, find the size of the unknown side. (Remember to include relevant units)

a)
Volume = 280cm³
?
5cm
8 cm

b)
11cm
Volume=1980cm³
?
30cm

c)
?
Volume=24 000m³
20m
40m

d)
10m
Volume = 1250m³
5m
?
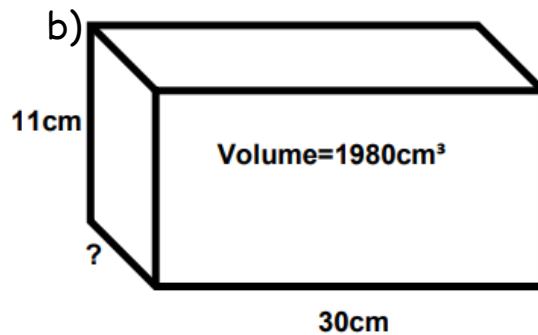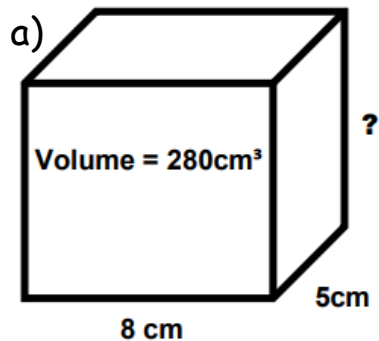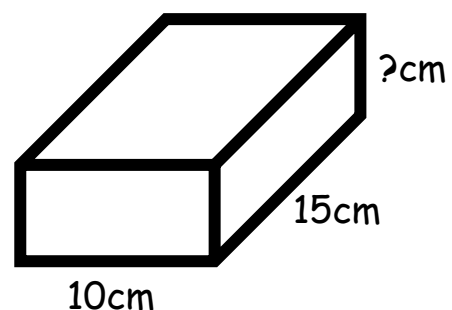
7) The Volume of a cuboid is 180 cm^3. It has a side length of 5cm and breadth of 4cm. Work out the size of the height.

8) The volume of a cube is $64cm^3$. Find the length one side.

9) The Volume of a dice is 16 cm^3. Work out the length of one side to 3dp.

10) This cuboid has a **Volume of 600 mm^3**.

Work out the surface area of the Cuboid.

?cm
15cm
10cm

11) A blue cube has a side length 8cm. A red cube has a side length that is 50% larger than the blue cube. What is the volume of the blue cube?

12) Karmela wants to go on holiday using Prenton Airlines. She has a suitcase that is shaped like a cuboid. The suitcase has a base size of 33.5cm, a height of 60.5cm and a breadth of 20.1cm.

Prenton Airlines states that baggage capacity **cannot** be anything over $40,737cm^3$.

Can Karmela use her suitcase on Prenton Airlines?

13) I have 64 small cube shaped boxes with a side length of 8mm. I can fit my small boxes perfectly into a larger cuboid as the image illustrates.
What is the volume of the large cuboid?
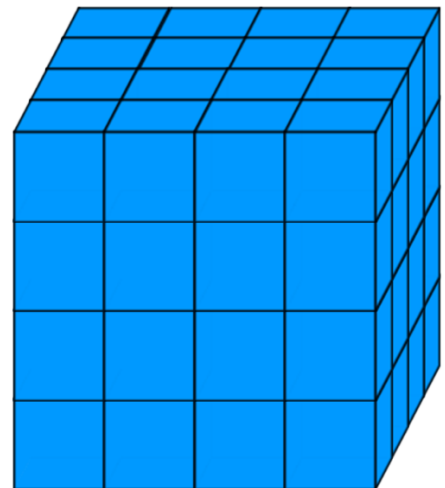
Cross Curricular: Science

8ℓ of apple juice from a jug is used to fill up an empty container measuring 10cm by 9cm by 40cm completely. What is the volume of apple juice left in the jug?

Hint: 1L is 1000 cm^3

Solutions

1) $162000 \: cm^3$

2) $4800 \: m^3$

3) $27 mm^3$

4) $1000 \: cm^3$

5)

    a) $160 \: m^3$

    b) $63 \: cm^3$

    c) $19.8 \: m^3$

    d) $9 \: m^3$

    e) $19200 \: mm^3$

    f) $6,825,600,000 \: cm^3$

6)

    a) 7cm

    b) 6cm

    c) 30m

    d) 25m

7) $9 \: cm^3$

8) 4cm

9) 2.5198421cm = 2.520cm

10) $500 \: cm^2$

11) $1728 \: cm^3$

12) No, $40737.675 \: cm^3$ is over the capacity by 0.675

13) (8mm x 4 = 32mm for each side) $32768 \: mm^3$

14) $4400 \: cm^3$ left