Calculate, Compare and Order

I can calculate and compare the volume of cubes and cuboids.

1. Calculate the volume of each shape, then use <, > or = to compare them.

a)

4cm
4cm
4cm

volume = ___ cm³

6m
1m
7m

volume = ___ m³

b)

7m
1m
5m

volume = ___ m³

16m
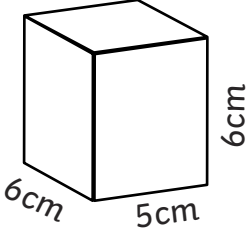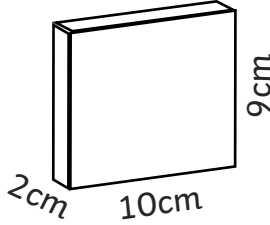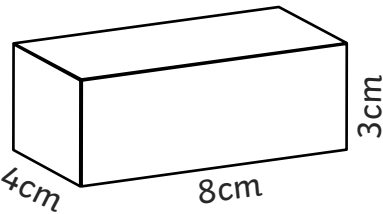1m
7m

volume = ___ m³

c)

6cm
6cm
5cm

volume = ___ cm³

9cm
2cm
10cm

volume = ___ cm³

d)

3cm
4cm
8cm

volume = ___ cm³

8cm
3cm
3cm

volume = ___ cm³

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Maths I Year 6 I Measurement I Volume of Cubes and Cuboids I Lesson 2 of 3: Calculating and Comparing Volume

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2. Calculate the volume of each shape, then order the shapes from smallest to greatest volume.

Shape A	Shape B
9cm 9cm 2cm Volume =	4cm 5cm 9cm Volume =
Shape C	**Shape D**
8cm 6cm 5cm Volume =	9cm 2cm 6cm Volume =

Order:

3. A cuboid has a volume of 60cm³. A cube has sides of 4cm. Which has the greater volume, the cuboid or the cube?

Calculate, Compare and Order **Answers**

1. Calculate the volume of each shape, then use <, > or = to compare them.

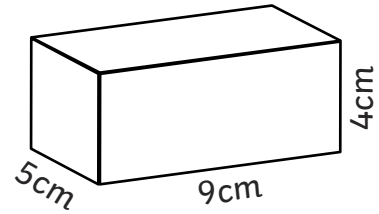|		
a) volume = **64cm³**	**>**	volume = **42cm³**
b) volume = **35m³**	**<**	volume = **112m³**
c) volume = **180cm³**	**=**	volume = **180cm³**
d) volume = **96cm³**	**>**	volume = **72cm³**

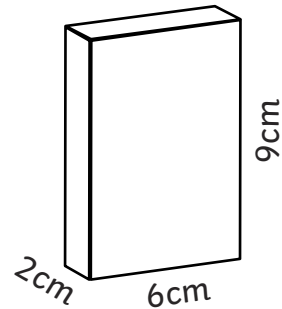2. Calculate the volume of each shape, then order the shapes from smallest to greatest volume.

Shape A	Shape B
Volume = **162cm³**	Volume = **180cm³**
Shape C	**Shape D**
Volume = **240cm³**	Volume = **108cm³**

Order: **D, A, B, C**

3. A cuboid has a volume of 60cm³. A cube has sides of 4cm. Which has the greater volume, the cuboid or the cube?
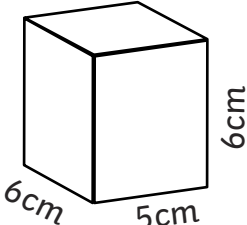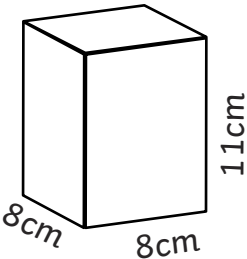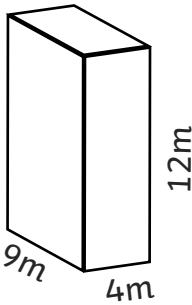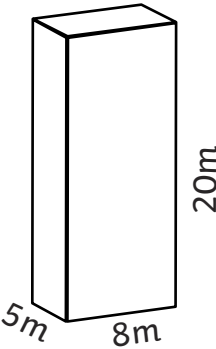**The cube has the greater volume (64cm³).**

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Maths I Year 6 I Measurement I Volume of Cubes and Cuboids I Lesson 2 of 3: Calculating and Comparing Volume
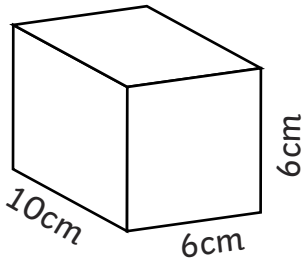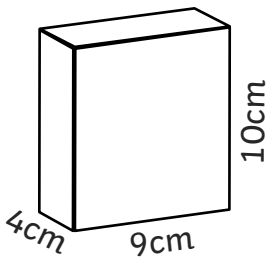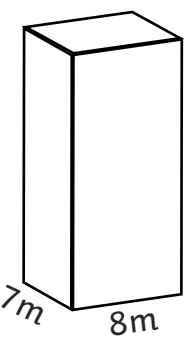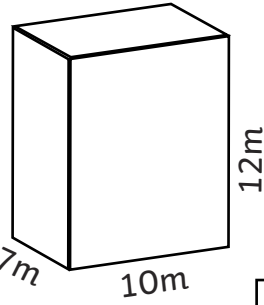
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Calculate, Compare and Order

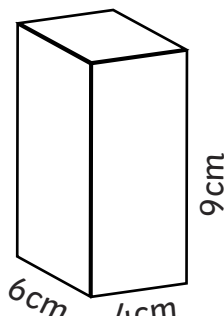I can calculate and compare the volume of cubes and cuboids.

1. Calculate the volume of each shape, then use <, > or = to compare them.

a)

6cm
6cm
5cm

volume =   cm³

11cm
8cm
8cm

volume =   cm³

b)

12m
9m
4m

volume =   m³

20m
5m
8m

volume =   m³

c)

6cm
10cm
6cm

volume =   cm³

10cm
4cm
9cm

volume =   cm³

d)

17m
7m
8m

volume =   m³

12m
7m
10m
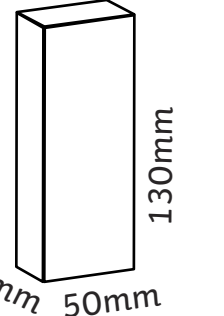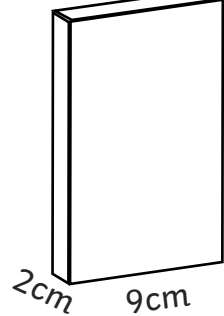
volume =   m³

2. In these pairs, the measurements are in different units. Before comparing them, make sure you have converted the measurements to the same unit.

a)

9cm

6cm   4cm

volume =

190mm

10mm 70mm

volume =

b)

130mm

30mm 50mm

volume =

14cm

2cm   9cm

volume =

3. Give the dimensions of a cube or cuboid that would be between the volumes of the two cuboids shown.

3cm

4cm   12cm

Dimensions of cube or cuboid:

5cm

4cm   15cm

4. A cuboid has a volume of 120cm³. Two identical cubes have sides measuring 4cm. Which has the greater volume, the cuboid or the two cubes? Show how you worked out the answer.

Calculate, Compare and Order **Answers**

1. Calculate the volume of each shape, then use <, > or = to compare them.

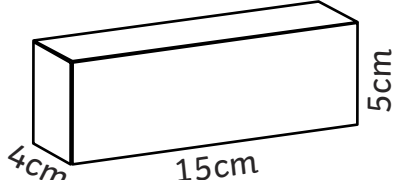|		
a) volume = **180cm³**	**<**	volume = **704cm³**
b) volume = **432m³**	**<**	volume = **800m³**
c) volume = **360cm³**	**=**	volume = **360cm³**
d) volume = **952m³**	**>**	volume = **840m³**

2. In these pairs, the measurements are in different units. Before comparing them, make sure you have converted the measurements to the same unit.

a) volume = **216cm³ or 216 000mm³**	**>**	volume = **133cm³ or 133 000mm³**
b) volume = **195cm³ or 195 000mm³**	**<**	volume = **252cm³ or 252 000mm³**

3. Give the dimensions of a cube or cuboid that would be between the volumes of the two cuboids shown.
   Dimensions of cube or cuboid, which give a volume greater than 144cm³ and less than 300cm³, e.g. 11cm × 5cm × 4cm or 10cm × 6cm × 3cm.

4. A cuboid has a volume of 120cm³. Two identical cubes have sides measuring 4cm. Which has the greater volume, the cuboid or the two cubes? Show how you worked out the answer.
   Cube = 4cm × 4cm × 4cm = 64cm³
   2 cubes = 64cm³ × 2 = 128cm³
   The two cubes have the greater volume.
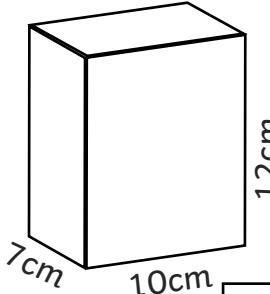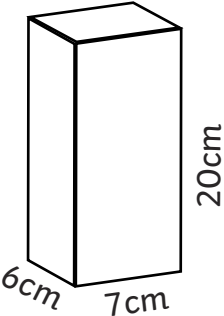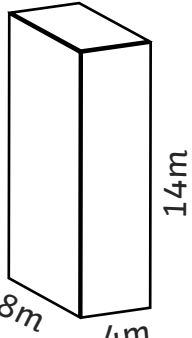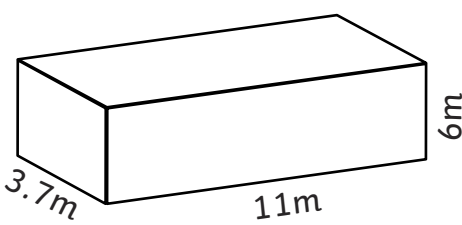
Calculate, Compare and Order
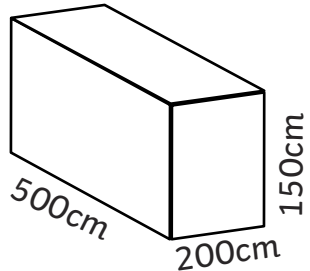
I can calculate and compare the volume of cubes and cuboids.

1. Calculate the volume of each shape, then use <, > or = to compare them.

a)

12cm, 7cm, 10cm

volume =

20cm, 6cm, 7cm

volume =

b)

14m, 8m, 4m

volume =

3.7m, 11m, 6m
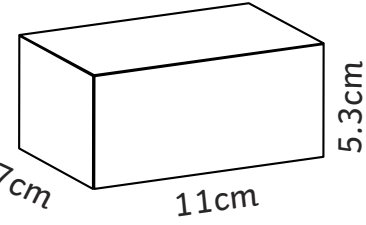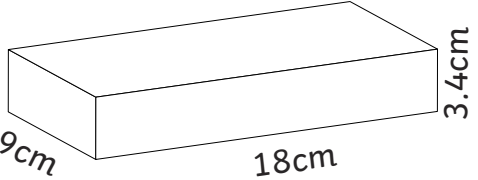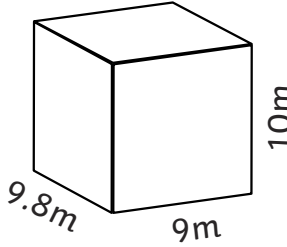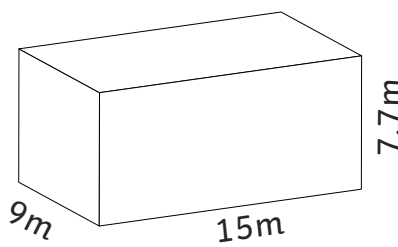
volume =

c)

5.3cm, 7cm, 11cm

volume =

9cm, 18cm, 3.4cm

volume =

d)

10m, 9.8m, 9m

volume =

7.7m, 9m, 15m

volume =

2. In these pairs, the measurements are in different units. Before calculating the volumes, estimate which shape you think will have the greater volume. When comparing the cuboids, make sure you have converted the measurements to the same unit.

a) 9cm / 3cm / 21cm volume =	Estimate (<, > or =) Actual (<, > or =)	40mm / 60mm / 140mm volume =
b) 150cm / 500cm / 200cm volume =	Estimate (<, > or =) Actual (<, > or =)	2m / 1.5m / 6m volume =

3. Give the dimensions of a cube or cuboid that would be between the volumes of the two cuboids shown.

2cm / 5cm / 18cm

Dimensions of cube or cuboid:

70mm / 20mm / 210mm

4. A cuboid has a volume of 320cm³. Two identical cubes have sides measuring 5cm. Jaswinder says that the difference between the volume of the cuboid and the two cubes is less than 50cm³. Is she correct? Show how you know.

Calculate, Compare and Order **Answers**
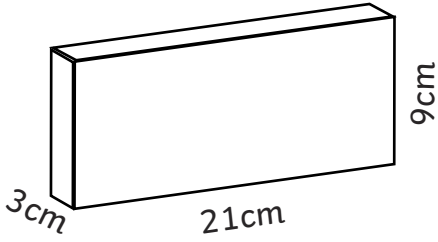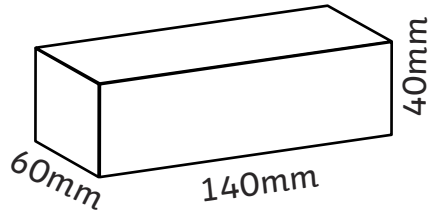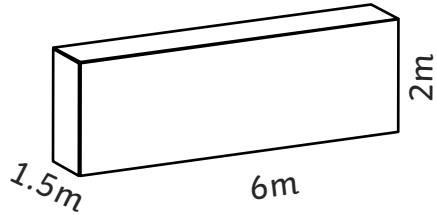
1. Calculate the volume of each shape, then use <, > or = to compare them.
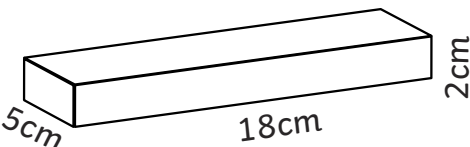
a) volume = **840cm³**	**=**	volume = **840cm³**
b) volume = **448m³**	**>**	volume = **244.2m³**
c) volume = **408.1cm³**	**<**	volume = **550.8cm³**
d) volume = **882m³**	**<**	volume = **1039.5m³**

2. In these pairs, the measurements are in different units. Before comparing them, make sure you have converted the measurements to the same unit. When comparing the cuboids, make sure you have converted the measurements to the same unit.

a) volume = **567cm³ or 567 000mm³**	**>**	volume = **336cm³ or 336 000mm³**
b) volume = **15m³ or 15 000 000cm³**	**<**	volume = **18m³ or 18 000 000cm³**

3. Give the dimensions of a cube or cuboid that would be between the volumes of the two cuboids shown.
   Dimensions of cube or cuboid, that give a volume greater than 180cm³ and less than 294cm³, e.g. 5cm × 5cm × 8cm or 5cm × 6cm × 7cm.

4. A cuboid has a volume of 320cm³. Two identical cubes have sides measuring 5cm. Jaswinder says that the difference between the volume of the cuboid and the two cubes is less than 50cm³. Is she correct? Show how you know.
   She is not correct. The volume of 1 cube = 5cm × 5cm × 5cm = 125cm³.
   The volume of 2 cubes = 125cm³ × 2 = 250cm³.
   The difference between the volumes = 320cm³ – 250cm³ = 70cm³.
   This is greater than 50cm³.