Discussion Problems
Step 8: Volume of a Cuboid

National Curriculum Objectives:

Mathematics Year 6: (6M8a) Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3]
Mathematics Year 6: (6M7c) Recognise when it is possible to use formulae for the area of shapes

About this resource:

This resource has been designed for pupils who understand the concepts within this step. It provides pupils with more opportunities to enhance their reasoning and problem solving skills through more challenging problems. Pupils can work in pairs or small groups to discuss with each other about how best to tackle the problem, as there is often more than one answer or more than one way to work through the problem.

There may be various answers for each problem. Where this is the case, we have provided one example answer to guide discussion.

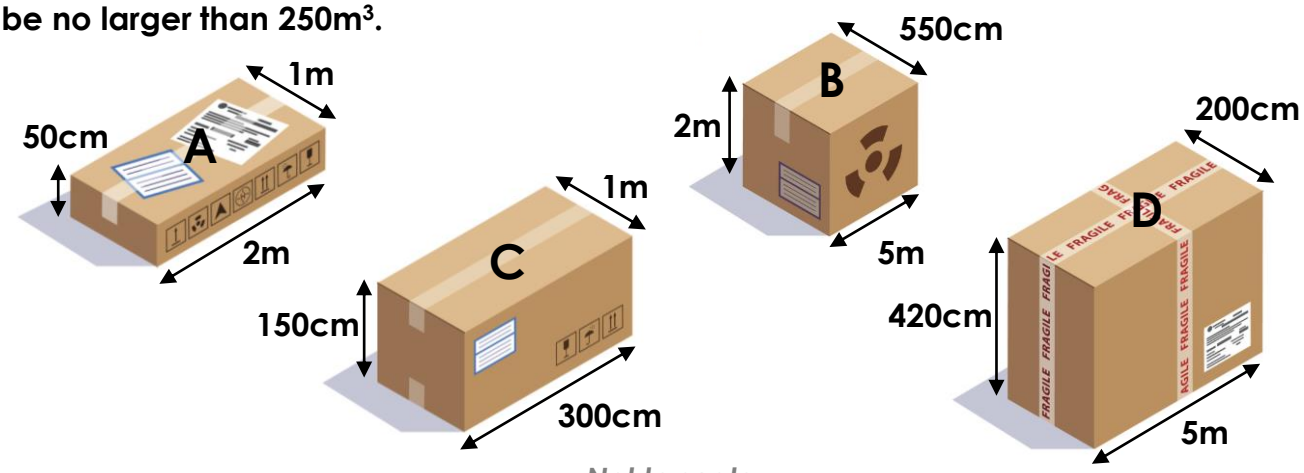
We recommend self or peer marking using the answer page provided to promote discussion and self-correction.

More Year 6 Perimeter, Area and Volume resources.

Did you like this resource? Don't forget to review it on our website.

Volume of a Cuboid

1. Delivery Driver Dave has 100 each of 4 different parcels. The parcels need to be stacked, ready for delivery. Each stack can only contain one type of parcel, and can be no larger than 250m³.



Not to scale

How many stacks of each parcel will Dave need to make before he can deliver?

Dave has another parcel size that fits exactly into 4 stacks. What could its dimensions be?

DP

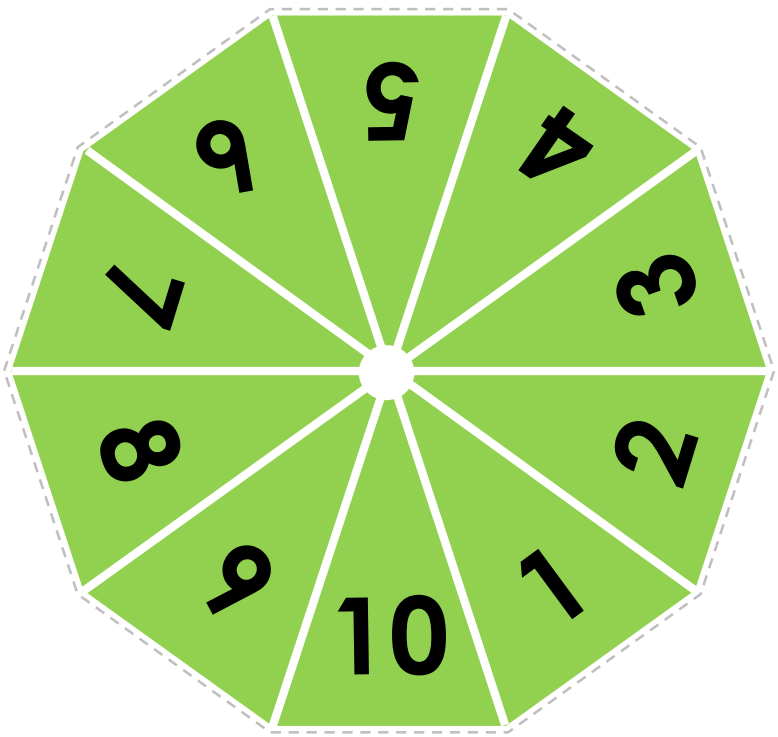
2. Use this spinner to generate 3 numbers for the length, width and height of a cuboid. Multiply the numbers to calculate the volume. On the bingo board, use counters to cover the range within which the calculated volume falls.

GAME 1

The winner is the first player to cover a line across or down.

GAME 2

The winner is the first player to cover all the ranges on the board.



DP

Volume of a Cuboid

201 – 250cm^3	451 – 500cm^3	701 – 750cm^3	951 – 1000cm^3
151 – 200cm^3	401 – 450cm^3	651 – 700cm^3	901 – 950cm^3
101 – 150cm^3	351 – 400cm^3	601 – 650cm^3	851 – 900cm^3
51 – 100cm^3	301 – 350cm^3	551 – 600cm^3	801 – 850cm^3
1 – 50cm^3	251 – 300cm^3	501 – 550cm^3	751 – 800cm^3

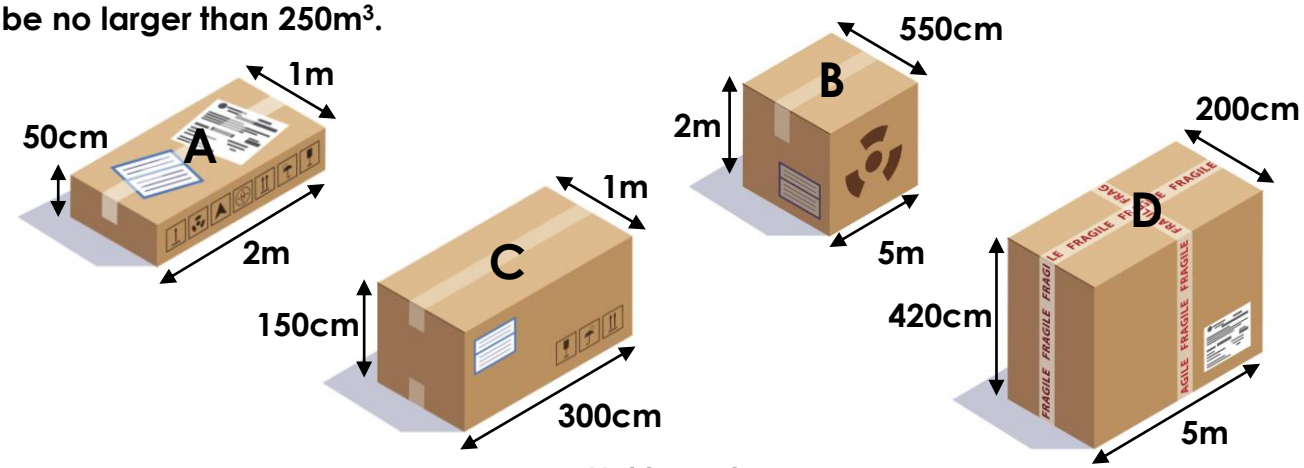
201 – 250cm^3	451 – 500cm^3	701 – 750cm^3	951 – 1000cm^3
151 – 200cm^3	401 – 450cm^3	651 – 700cm^3	901 – 950cm^3
101 – 150cm^3	351 – 400cm^3	601 – 650cm^3	851 – 900cm^3
51 – 100cm^3	301 – 350cm^3	551 – 600cm^3	801 – 850cm^3
1 – 50cm^3	251 – 300cm^3	501 – 550cm^3	751 – 800cm^3

201 – 250cm^3	451 – 500cm^3	701 – 750cm^3	951 – 1000cm^3
151 – 200cm^3	401 – 450cm^3	651 – 700cm^3	901 – 950cm^3
101 – 150cm^3	351 – 400cm^3	601 – 650cm^3	851 – 900cm^3
51 – 100cm^3	301 – 350cm^3	551 – 600cm^3	801 – 850cm^3
1 – 50cm^3	251 – 300cm^3	501 – 550cm^3	751 – 800cm^3

201 – 250cm^3	451 – 500cm^3	701 – 750cm^3	951 – 1000cm^3
151 – 200cm^3	401 – 450cm^3	651 – 700cm^3	901 – 950cm^3
101 – 150cm^3	351 – 400cm^3	601 – 650cm^3	851 – 900cm^3
51 – 100cm^3	301 – 350cm^3	551 – 600cm^3	801 – 850cm^3
1 – 50cm^3	251 – 300cm^3	501 – 550cm^3	751 – 800cm^3

Volume of a Cuboid

1. Delivery Driver Dave has 100 each of 4 different parcels. The parcels need to be stacked, ready for delivery. Each stack can only contain one type of parcel, and can be no larger than 250m³.



Not to scale

How many stacks of each parcel will Dave need to make before he can deliver?

A = 0.5m x 1m x 2m = 1m³; 1m³ x 100 = 100m³; 100m³ ÷ 250m³ = 0.4 (1 stack)

B = 2m x 5.5m x 5m = 55m³; 55m³ x 100 = 5,500m³; 5,500m³ ÷ 250m³ = 22 (22 stacks)

C = 1.5m x 1m x 3m = 4.5m³; 4.5m³ x 100 = 450m³; 450m³ ÷ 250m³ = 1.8 (2 stacks)

D = 4.2m x 2m x 5m = 42m³; 42m³ x 100 = 4,200m³; 4,200m³ ÷ 250m³ = 16.8 (17 stacks)

Dave has another parcel size that fits exactly into 4 stacks. What could its dimensions be? Various answers, for example: 4 stacks = 1,000m³, so the parcels could be 5m x 2m x 1m.

DP

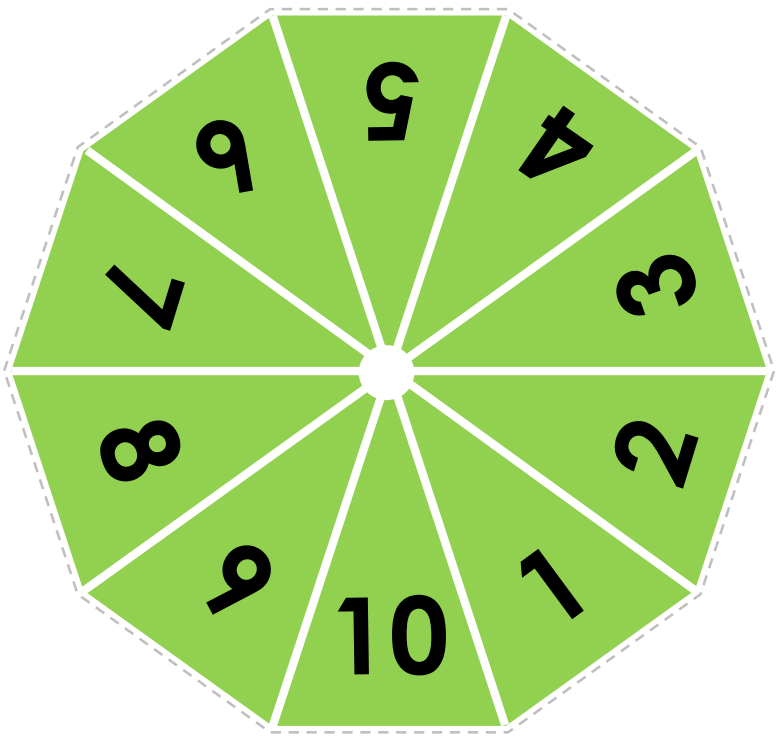
2. Use this spinner to generate 3 numbers for the length, width and height of a cuboid. Multiply the numbers to calculate the volume. On the bingo board, use counters to cover the range within which the calculated volume falls.

GAME 1

The winner is the first player to cover a line across or down.

GAME 2

The winner is the first player to cover all the ranges on the board.



DP