

GRADE 7

VOLUME & SURFACE AREA

Complete Printable Worksheet Pack

6 Worksheets	Separate Answer Keys
Volume & Capacity	Surface Area
Missing Dimensions	Real-Life & Challenge Problems

A4 printable • International Grade 7 level

Worksheet 1: Volume of Cuboids & Cubes

Show your working. Use correct units and explain your reasoning where asked.

1. Find the volume of a cuboid measuring $12\text{ cm} \times 8\text{ cm} \times 5\text{ cm}$.
2. Find the volume of a cube with side length 7 cm .
3. A cuboid has length 15 cm , width 6 cm and height 4.5 cm . Find its volume.
4. A cube has volume 729 cm^3 . Find its side length.
5. A cuboid has volume 960 cm^3 , length 12 cm and width 8 cm . Find its height.
6. A storage box measures $1.2\text{ m} \times 0.8\text{ m} \times 0.5\text{ m}$. Find its volume in m^3 .
7. A rectangular aquarium is 80 cm long, 35 cm wide and 45 cm high. Find its volume in cm^3 and litres.
8. A cuboid has dimensions $2.5\text{ m} \times 1.4\text{ m} \times 0.6\text{ m}$. Find its volume.
9. Two boxes have volumes $2,400\text{ cm}^3$ and $3,150\text{ cm}^3$. What is their combined volume?
10. A cube has side 9 cm . By how much does its volume increase if the side becomes 10 cm ?

Answer Key 1: Volume of Cuboids & Cubes

Equivalent correct methods are acceptable.

1. 480 cm^3
2. 343 cm^3
3. 405 cm^3
4. 9 cm
5. 10 cm
6. 0.48 m^3
7. $126,000 \text{ cm}^3 = 126 \text{ L}$
8. 2.1 m^3
9. $5,550 \text{ cm}^3$
10. $10^3 - 9^3 = 271 \text{ cm}^3$

Worksheet 2: Surface Area of Cuboids & Cubes

Show your working. Use correct units and explain your reasoning where asked.

1. Find the total surface area of a cuboid $10\text{ cm} \times 6\text{ cm} \times 4\text{ cm}$.
2. Find the total surface area of a cube with side 8 cm .
3. Find the surface area of a cuboid $12\text{ cm} \times 5\text{ cm} \times 3\text{ cm}$.
4. A cube has side 6.5 cm . Find its total surface area.
5. A cuboid has dimensions $15\text{ cm} \times 8\text{ cm} \times 4\text{ cm}$. Find its total surface area.
6. Find the surface area of a cube with volume $1,000\text{ cm}^3$.
7. A rectangular gift box measures $20\text{ cm} \times 12\text{ cm} \times 5\text{ cm}$. How much wrapping paper is needed to cover it completely?
8. A cuboid is $2\text{ m} \times 1.5\text{ m} \times 0.8\text{ m}$. Find its surface area in m^2 .
9. Which has the greater surface area: a cube of side 6 cm or a cuboid $9\text{ cm} \times 5\text{ cm} \times 4\text{ cm}$?
10. A cuboid has surface area 148 cm^2 and dimensions $5\text{ cm} \times 4\text{ cm} \times h$. Find h .

Answer Key 2: Surface Area of Cuboids & Cubes

Equivalent correct methods are acceptable.

1. 248 cm^2
2. 384 cm^2
3. 222 cm^2
4. 253.5 cm^2
5. 424 cm^2
6. Side 10 cm; surface area 600 cm^2
7. 920 cm^2
8. 13.6 m^2
9. Cube: 216 cm^2 ; cuboid: 202 cm^2 ; cube is greater by 14 cm^2
10. $2(20+5h+4h)=148 \rightarrow 48+18h=148 \rightarrow h=50/9 \approx 5.56 \text{ cm}$

Worksheet 3: Volume, Capacity & Unit Conversions

Show your working. Use correct units and explain your reasoning where asked.

1. Convert 3.6 m^3 to litres.
2. Convert $4,250 \text{ cm}^3$ to litres.
3. A tank measures $2 \text{ m} \times 1.5 \text{ m} \times 1.2 \text{ m}$. What is its capacity in litres?
4. A container holds 18 L. How many cubic centimetres is this?
5. A cuboid has volume 0.75 m^3 . Express its volume in litres.
6. A bottle contains 1.25 L. How many cubic centimetres is this?
7. A swimming pool is $10 \text{ m} \times 4 \text{ m} \times 1.5 \text{ m}$. Find its volume in litres.
8. A box has volume $18,000 \text{ cm}^3$. How many 750 cm^3 containers can be filled completely?
9. A tank has capacity 2,400 L and is 65% full. How many litres of water are in it?
10. A water tank measures $1.5 \text{ m} \times 1.2 \text{ m} \times 1 \text{ m}$. How many litres must be removed to leave exactly 1,000 L?

Answer Key 3: Volume, Capacity & Unit Conversions

Equivalent correct methods are acceptable.

1. 3,600 L
2. 4.25 L
3. $3.6 \text{ m}^3 = 3,600 \text{ L}$
4. $18,000 \text{ cm}^3$
5. 750 L
6. $1,250 \text{ cm}^3$
7. 60,000 L
8. 24 containers
9. 1,560 L
10. Total 1,800 L; remove 800 L

Worksheet 4: Missing Dimensions & Volume Reasoning

Show your working. Use correct units and explain your reasoning where asked.

1. A cuboid has volume 720 cm^3 , length 12 cm and width 10 cm. Find its height.
2. A cuboid has volume $1,008 \text{ cm}^3$, width 9 cm and height 7 cm. Find its length.
3. A rectangular tank has volume 4.8 m^3 , length 2 m and width 1.5 m. Find its height.
4. A cube has volume $1,728 \text{ cm}^3$. Find its side length and surface area.
5. A cuboid has volume $2,160 \text{ cm}^3$. Its dimensions are $18 \text{ cm} \times 10 \text{ cm} \times h$. Find h .
6. A box has volume $1,200 \text{ cm}^3$. If its length is doubled while width and height stay the same, what is its new volume?
7. A cuboid measures $16 \text{ cm} \times 10 \text{ cm} \times 6 \text{ cm}$. If its height is reduced by 2 cm, how much volume is lost?
8. A cube's side length is doubled. By what factor does its volume change?
9. Two cuboids have the same volume of 480 cm^3 . One is $12 \times 8 \times 5$. Give another set of whole-number dimensions.
10. A tank is $80 \text{ cm} \times 50 \text{ cm} \times 40 \text{ cm}$. It is filled to 75%. How many litres of water does it contain?

Answer Key 4: Missing Dimensions & Volume Reasoning

Equivalent correct methods are acceptable.

1. 6 cm
2. 16 cm
3. 1.6 m
4. Side 12 cm; surface area 864 cm²
5. 12 cm
6. 2,400 cm³
7. $16 \times 10 \times 6 - 16 \times 10 \times 4 = 320 \text{ cm}^3$ lost
8. 8 times
9. Example: $10 \times 8 \times 6 = 480 \text{ cm}^3$
10. Total 160 L; 75% = 120 L

Worksheet 5: Volume & Surface Area in Real Life

Show your working. Use correct units and explain your reasoning where asked.

1. A wooden crate is $1.5\text{ m} \times 0.8\text{ m} \times 0.6\text{ m}$. Find its volume and external surface area.
2. A metal cuboid is $40\text{ cm} \times 25\text{ cm} \times 15\text{ cm}$. Find its volume and total surface area.
3. A closed rectangular tank is $3\text{ m} \times 2\text{ m} \times 1.5\text{ m}$. How much material is needed to make its outer surface, ignoring thickness?
4. A storage room is $5\text{ m} \times 4\text{ m} \times 3\text{ m}$. Find its volume. If boxes each occupy 0.5 m^3 , how many boxes fit by volume?
5. A cube-shaped gift box has side 12 cm . Find the volume and surface area.
6. A water trough is $2.5\text{ m} \times 0.8\text{ m} \times 0.5\text{ m}$. What is its capacity in litres?
7. A rectangular swimming pool is $15\text{ m} \times 8\text{ m} \times 1.6\text{ m}$. Find its capacity in litres.
8. A cuboid package has dimensions $30\text{ cm} \times 20\text{ cm} \times 10\text{ cm}$. If cardboard costs $\$0.02$ per cm^2 , estimate the cost of covering its entire surface.
9. A tank holds $5,000\text{ L}$. Its base is $2.5\text{ m} \times 2\text{ m}$. Find its height.
10. A cube-shaped container has volume $8,000\text{ cm}^3$. Find its side length and surface area.

Answer Key 5: Volume & Surface Area in Real Life

Equivalent correct methods are acceptable.

1. Volume 0.72 m^3 ; surface area 4.44 m^2
2. Volume $15,000 \text{ cm}^3$; surface area $3,700 \text{ cm}^2$
3. Surface area = 39 m^2
4. Volume 60 m^3 ; 120 boxes by volume
5. Volume $1,728 \text{ cm}^3$; surface area 864 cm^2
6. 1,000 L
7. 192,000 L
8. Surface area $2,200 \text{ cm}^2$; cost \$44
9. $5,000 \text{ L} = 5 \text{ m}^3$; height = 1 m
10. Side 20 cm; surface area $2,400 \text{ cm}^2$

Worksheet 6: Volume & Surface Area Challenge

Show your working. Use correct units and explain your reasoning where asked.

1. A cuboid has volume $1,440 \text{ cm}^3$ and dimensions $15 \text{ cm} \times 12 \text{ cm} \times h$. Find h and its total surface area.
2. A closed cuboid has dimensions $20 \text{ cm} \times 12 \text{ cm} \times 8 \text{ cm}$. A second cuboid has the same volume but dimensions $24 \text{ cm} \times 10 \text{ cm} \times 8 \text{ cm}$. Compare their surface areas.
3. A rectangular tank is $2.4 \text{ m} \times 1.5 \text{ m} \times 1.2 \text{ m}$. It is 80% full. How many litres of water are in it?
4. A cube has surface area $1,176 \text{ cm}^2$. Find its side length and volume.
5. A storage container has capacity 2,000 L. Its length is 2.5 m and width is 1.6 m. Find its height.
6. A cuboid measures $18 \text{ cm} \times 10 \text{ cm} \times 8 \text{ cm}$. A smaller cuboid $6 \text{ cm} \times 4 \text{ cm} \times 3 \text{ cm}$ is removed. Find the remaining volume.
7. A box has dimensions $40 \text{ cm} \times 30 \text{ cm} \times 20 \text{ cm}$. It is filled with cubes of side 5 cm. How many cubes fit by volume?
8. A tank is 1.8 m long, 1.2 m wide and 1 m high. It loses 15% of its water through use. If it was initially full, how many litres remain?
9. A cube and a cuboid both have volume $1,000 \text{ cm}^3$. The cube has side 10 cm; the cuboid is $20 \text{ cm} \times 10 \text{ cm} \times 5 \text{ cm}$. Compare their surface areas.
10. A rectangular prism has dimensions $2 \text{ m} \times 1.5 \text{ m} \times 0.8 \text{ m}$. If all three dimensions are increased by 25%, by what factor does its volume increase?

Answer Key 6: Volume & Surface Area Challenge

Equivalent correct methods are acceptable.

1. $h=8$ cm; surface area = $2(180+120+96)=792$ cm²
2. First SA=992 cm²; second SA=976 cm²; first is 16 cm² greater
3. Total 4.32 m³ = 4,320 L; 80% = 3,456 L
4. $6s^2=1,176 \rightarrow s^2=196 \rightarrow s=14$ cm; volume=2,744 cm³
5. 2,000 L = 2 m³; $h=2 \div (2.5 \times 1.6)=0.5$ m
6. $1,440-72=1,368$ cm³
7. $8 \times 6 \times 4=192$ cubes
8. Total 2,160 L; remain 85%=1,836 L
9. Cube SA=600 cm²; cuboid SA=700 cm²; cuboid is 100 cm² greater
10. Volume factor = $1.25^3 = 1.953125$, so the volume increases by 95.3125%.