Merit Tutoring

WORKSHEET 33

Year 6 Mathematics: Measurement

Volume & Capacity

Focus: Volume (Cubic Centimetres)

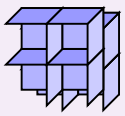
Name: _____ **Date:** _____

Understanding Volume

Volume is the amount of 3D space an object occupies.
Measuring Volume:

- Volume is measured in **cubic units** (e.g., cm^3, m^3)
- A cube with sides of 1 cm has a volume of $1cm^3$

Counting Cubes: Stack cubes and count them!



Volume = 8 cm^3

Volume Formula for Rectangular Prisms:

$$\text{Volume} = \text{Length} \times \text{Width} \times \text{Height}$$

$$V = L \times W \times H$$

Example: Box is 4 cm $\times$ 3 cm $\times$ 2 cm
$V = 4 \times 3 \times 2 = 24cm^3$

Section 1: Counting Cubes (Fluency)

1. Count the cubes to find the volume. (Each cube is $1cm^3$)

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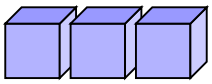
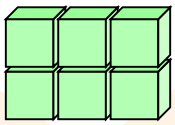


Answer: _____

2. Find the volume of this shape (2 rows of 3 cubes):



Answer: _____

3. A shape is made of 5 unit cubes arranged in an L-shape. What is its volume?

Answer: _____

4. How many $1cm^3$ cubes fit in a $2 \times 2 \times 2$ cube?

Answer: _____

5. A rectangular prism is made from 12 unit cubes arranged 3 long, 2 wide, and 2 high. What is the volume?

Answer: _____

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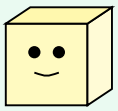
VOLUME VICTOR!



Happy Cube

Why did the cube go to school?
To become a little more well-rounded!

Section 2: Using the Formula (Reasoning)

6. Calculate the volume: Length 5 cm, Width 2 cm, Height 3 cm
Use: $V = L \times W \times H$

Answer: _____

7. A cereal box is 20 cm high, 10 cm wide, and 5 cm deep. What is its volume?

Answer: _____

8. Calculate the volume of a box: 8 cm long, 4 cm wide, 3 cm high.

Answer: _____

9. A dice is a cube with side length 1.5 cm. What is its volume?

Answer: _____

10. A book is 25 cm $\times$ 18 cm $\times$ 2 cm. What is its volume?

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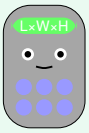
Answer: _____

11. A rectangular prism has dimensions 6 cm, 5 cm, and 4 cm. Find the volume.

Answer: _____

FORMULA MASTER!



Volume Calc

What did the calculator say to the box?

"Let me measure you up with my dimensions!"

Section 3: Missing Dimensions (Challenge)

12. The volume of a box is 24 cm^3. The length is 4 cm and width is 2 cm. What is the height?
(Hint: $24 = 4 \times 2 \times H$)

Answer: _____

13. Find the volume of a cube with side length 3 cm.

Answer: _____

14. A box has a volume of 60 cm^3. Its base is 5 cm $\times$ 3 cm. How high is it?

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Answer: _____

15. Find the volume of a cube with side length 5 cm.

Answer: _____

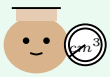
16. A rectangular prism has a volume of 48 cm^3. If the length is 6 cm and height is 2 cm, what is the width?

Answer: _____

17. True or False: A cube with side length 4 cm has a volume of 16 cm^3.

Answer: _____

DIMENSION DETECTIVE!



Detective

Why did the detective love volume problems?

Because every case had dimensions to investigate!

Excellent Work! Check your answers on the next page.

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ANSWER KEY

Worksheet 33: Volume (Cubic Centimetres)

Section 1: Counting Cubes

1. $3cm^3$ (3 cubes in a row)
2. $6cm^3$ (2 rows $\times$ 3 cubes = 6)
3. $5cm^3$ (5 unit cubes)
4. $8cm^3$ (2 $\times$ 2 $\times$ 2 = 8)
5. $12cm^3$ (3 $\times$ 2 $\times$ 2 = 12)

Section 2: Using the Formula

6. $30cm^3$ (5 $\times$ 2 $\times$ 3 = 30)
7. $1000cm^3$ (20 $\times$ 10 $\times$ 5 = 1000)
8. $96cm^3$ (8 $\times$ 4 $\times$ 3 = 96)
9. $3.375cm^3$ (1.5 $\times$ 1.5 $\times$ 1.5 = 3.375)
10. $900cm^3$ (25 $\times$ 18 $\times$ 2 = 900)
11. $120cm^3$ (6 $\times$ 5 $\times$ 4 = 120)

Section 3: Missing Dimensions

12. 3 cm (24 $\div$ 8 = 3, since 4 $\times$ 2 = 8)
13. $27cm^3$ (3 $\times$ 3 $\times$ 3 = 27)
14. 4 cm (60 $\div$ 15 = 4, since 5 $\times$ 3 = 15)
15. $125cm^3$ (5 $\times$ 5 $\times$ 5 = 125)
16. 4 cm (48 $\div$ 12 = 4, since 6 $\times$ 2 = 12)
17. False (4 $\times$ 4 $\times$ 4 = 64 cm^3, not 16)

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WORKSHEET 34

Year 6 Mathematics: Measurement

Volume & Capacity

Focus: Capacity (Litres & Millilitres)

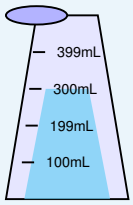
Name: _____ **Date:** _____

Understanding Capacity

Capacity is the amount of liquid a container can hold.
Units of Capacity:

- **Millilitres (mL)** - small amounts
- **Litres (L)** - larger amounts
- **Conversion:** 1000 mL = 1 L

Measuring Jug:



Measuring Jug

Volume vs Capacity Connection:

$$1cm^3 = 1mL$$

$$1000cm^3 = 1L$$

Example: A box with volume 500 cm^3 can hold 500 mL of water.

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Section 1: Capacity Conversions (Fluency)

1. Convert 2 Litres to millilitres.

Answer: _____

2. Convert 3500 mL to Litres.

Answer: _____

3. How many mL in half a litre?

Answer: _____

4. Convert 5 L to mL.

Answer: _____

5. Convert 750 mL to Litres.

Answer: _____

6. How many Litres in 4000 mL?

Answer: _____

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CAPACITY CAPTAIN!

Bucket Bear

What did the bucket say to the water?

"I've got you covered... to capacity!"

Section 2: Reading Scales (Reasoning)

7. A jug has markings every 100 mL. The water is at the 3rd mark. How much water is there?

Answer: _____

8. A bottle holds 1.25 L. How many mL is this?

Answer: _____

9. A container holds 2.5 L. How many mL is this?

Answer: _____

10. A beaker is marked in 50 mL intervals. The liquid is at the 8th mark. How much liquid?

Answer: _____

11. Which is more: 1500 mL or 1.2 L?

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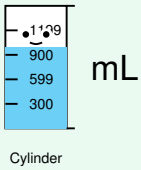
Answer: _____

SCALE STAR!



Why did the measuring cylinder smile?
Because it was filled with joy... and water!

Section 3: Volume vs Capacity (Challenge)

12. A container has a volume of 1000 cm^3. How many Litres of water can it hold?
(Remember: 1000 cm^3 = 1 L)

Answer: _____

13. A fish tank is 20 cm $\times$ 10 cm $\times$ 10 cm.
a) What is its volume in cm^3?
b) How many Litres is that?

Answer: _____

14. A box has dimensions 10 cm $\times$ 10 cm $\times$ 5 cm. How many mL of water can it hold?

Answer: _____

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15. A cube has sides of 10 cm. What is its capacity in Litres?

Answer: _____

16. A swimming pool holds 50000 L. How many m^3 is this? (Hint: 1000 L = 1 m^3)

Answer: _____

17. True or False: A container with volume 2500 cm^3 can hold 2.5 L of liquid.

Answer: _____

CONNECTION CHAMPION!

Drop

Why did the water droplet love maths?

Because every problem was crystal clear!

Outstanding Work! Check your answers on the next page.

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ANSWER KEY

Worksheet 34: Capacity (Litres & Millilitres)

Section 1: Capacity Conversions

1. 2000 mL ($2 \times 1000 = 2000$)
2. 3.5 L ($3500 \div 1000 = 3.5$)
3. 500 mL ($0.5 \times 1000 = 500$)
4. 5000 mL ($5 \times 1000 = 5000$)
5. 0.75 L ($750 \div 1000 = 0.75$)
6. 4 L ($4000 \div 1000 = 4$)

Section 2: Reading Scales

7. 300 mL (3rd mark at 100 mL each = 300)
8. 1250 mL ($1.25 \times 1000 = 1250$)
9. 2500 mL ($2.5 \times 1000 = 2500$)
10. 400 mL ($8 \times 50 = 400$)
11. 1500 mL is more (1.2 L = 1200 mL)

Section 3: Volume vs Capacity

12. 1 L (1000 cm^3 = 1000 mL = 1 L)
13. a) 2000 cm^3 ($20 \times 10 \times 10 = 2000$); b) 2 L
14. 500 mL ($10 \times 10 \times 5 = 500$ cm^3 = 500 mL)
15. 1 L ($10 \times 10 \times 10 = 1000$ cm^3 = 1 L)
16. 50 m^3 ($50000 \div 1000 = 50$)
17. True (2500 cm^3 = 2500 mL = 2.5 L)

Magnificent Success!

You've mastered Volume & Capacity!
From cubic centimetres to litres, you're overflowing with knowledge!

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