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Comparing Area and Volume - Year 4

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AREA AND VOLUME AT A GLANCE

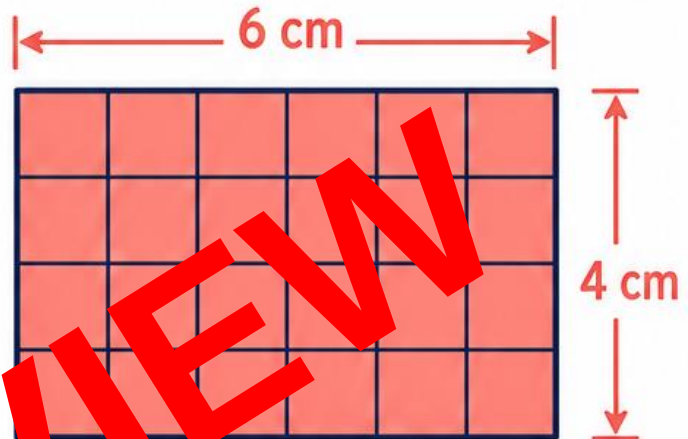
AREA

Area measures the surface covered by a flat shape.

$$\text{length} \times \text{width} = \text{area}$$

Square units: cm^2 or m^2

$$\text{Example: } 6 \text{ cm} \times 4 \text{ cm} = 24 \text{ cm}^2$$



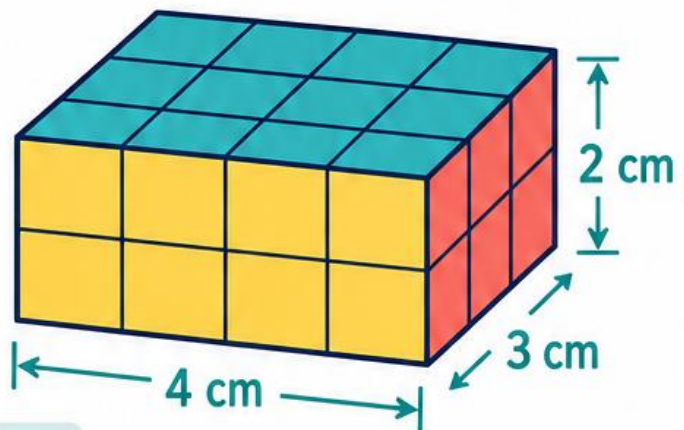
VOLUME

Volume measures the space occupied by a 3D object.

$$\text{length} \times \text{width} \times \text{height} = \text{volume}$$

Cubic units: cm^3

$$\text{Example: } 4 \text{ cm} \times 3 \text{ cm} \times 2 \text{ cm} = 24 \text{ cm}^3$$



Remember: square units for area, cubic units for volume.

AREA AND VOLUME QUICK GUIDE

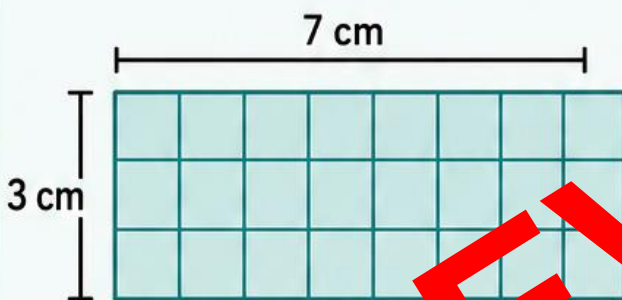
AREA

Area is the surface covered by a flat shape.

$$\text{length} \times \text{width} = \text{area}$$

Use square units: cm^2 or m^2

$$\text{Example: } 7 \text{ cm} \times 3 \text{ cm} = 21 \text{ cm}^2$$



Think: floors, gardens and walls



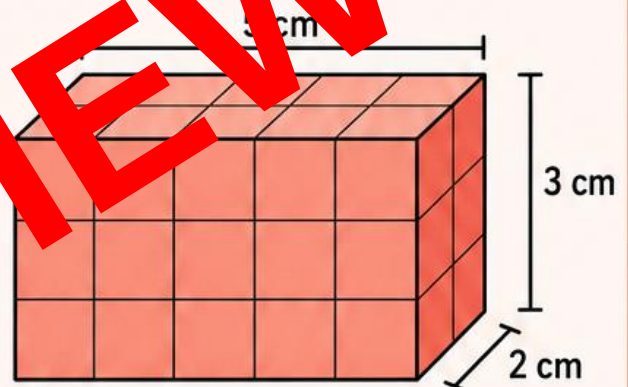
VOLUME

Volume is the space occupied by a 3D object.

$$\text{length} \times \text{width} \times \text{height} = \text{volume}$$

Use cubic units: cm^3

$$\text{Example: } 5 \text{ cm} \times 2 \text{ cm} \times 3 \text{ cm} = 30 \text{ cm}^3$$



Think: boxes, tanks and cube models



CHECK YOUR WORK

1.



Choose area or volume.

2.



Calculate carefully.

3.



Write the correct unit.

4.



Compare using $<$, $>$ or $=$.



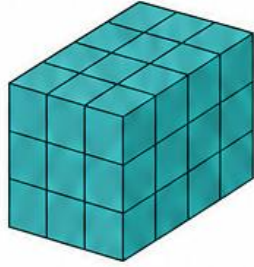
Square units for area. Cubic units for volume.

BUILD IT, MEASURE IT, COMPARE IT

Use centimetre cubes. Build each model, then record its volume on the activity mat.

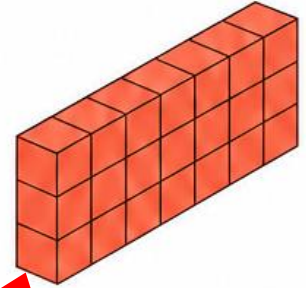
CARD 1

Build $2 \times 3 \times 4$.



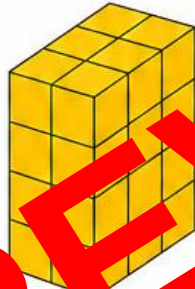
CARD 2

Build $1 \times 6 \times 4$.



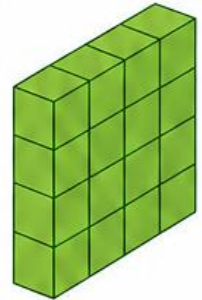
CARD 3

Build $2 \times 2 \times 5$.



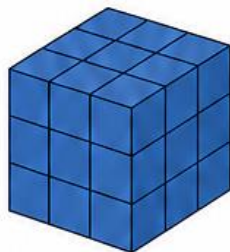
CARD 4

Build $1 \times 4 \times 5$.



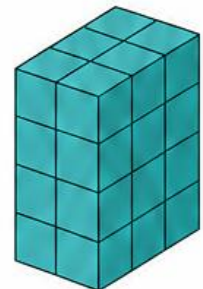
CARD 5

Build $3 \times 3 \times 3$.



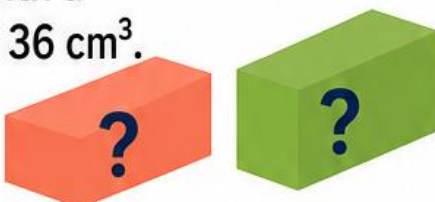
CARD 6

Build $2 \times 3 \times 5$.



CARD 7

Build two different cuboids with a volume of 36 cm^3 .



CARD 8

Build a cuboid with a volume greater than 40 cm^3 but less than 50 cm^3 .

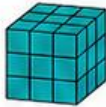


BUILD IT, MEASURE IT, COMPARE IT



Build two cube models. Record the dimensions and calculate each volume.

MODEL A



length: _____ cm

width: _____ cm

height: _____ cm

volume: _____ cm³

Sketch Model A:

MODEL B



length: _____ cm

width: _____ cm

height: _____ cm

volume: _____ cm³

Sketch Model B:

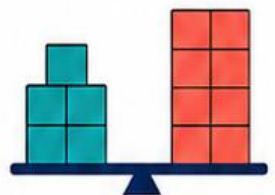
PREVIEW



COMPARE

Model A _____ Model B

Use <, > or =.



EXTENSION

Build two different cuboids with the same volume. Record their dimensions and explain how you know.

AREA OR VOLUME?

SORT AND SCORE

HOW TO PLAY

1. Shuffle the task cards and place them face down.
2. Draw a card. Name the measure, calculate the answer and place the card in the correct zone.
3. Score 1 point for the correct zone and 1 point for the correct answer.

First player to 10 points wins.

AREA

surface covered

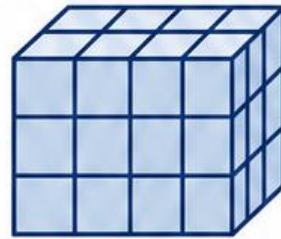


length $\times$ width

Use cm^2 or m^2

VOLUME

space occupied



length $\times$ width $\times$ height

Use cm^3

SCORE

Player 1:

1

2

3

4

5

6

7

8

9

10

Player 2:

1

2

3

4

5

6

7

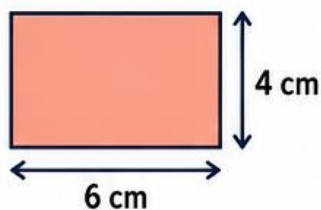
8

9

10

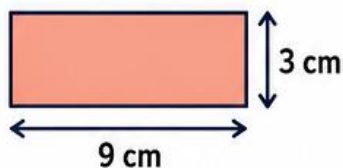
AREA OR VOLUME? TASK CARDS

A1



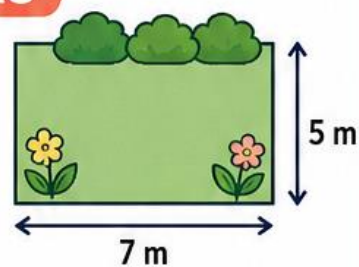
A rectangle is 6 cm by 4 cm. Find its area.

A2



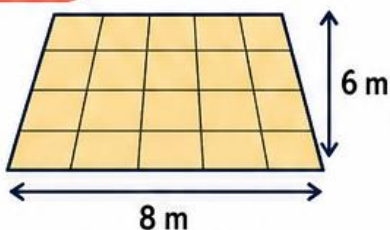
A rectangle is 9 cm by 3 cm. Find its area.

A3



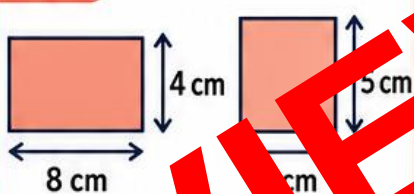
A garden is 7 m by 5 m. Find its area.

A4



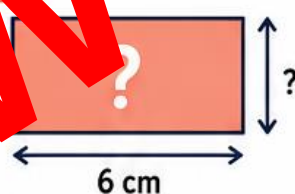
A floor is 8 m by 6 m. Find its area.

A5



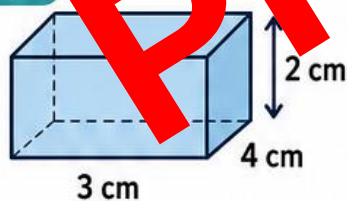
Which area is greater:
4 cm × 8 cm or
5 cm × 5 cm?

A6



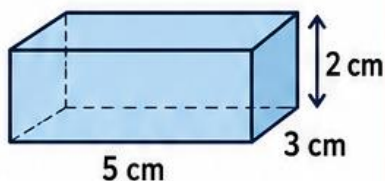
Area is 42 cm^2 . One side is 6 cm. Find the other side.

V1



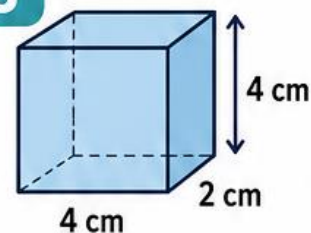
A box is 2 cm × 3 cm × 4 cm. Find its volume.

V2



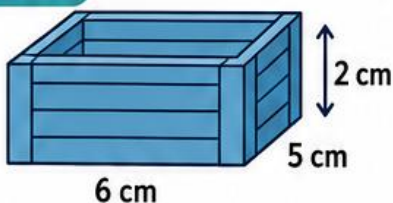
A box is 5 cm × 2 cm × 3 cm. Find its volume.

V3



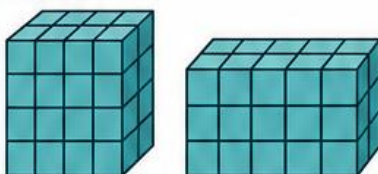
A prism is 4 cm × 4 cm × 2 cm. Find its volume.

V4



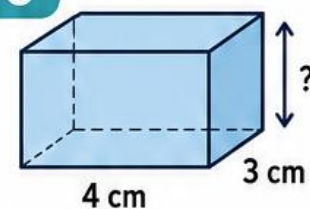
A crate is 6 cm × 2 cm × 5 cm. Find its volume.

V5



Which volume is greater:
 $3 \times 3 \times 4$ or $2 \times 5 \times 4$?

V6



Volume is 48 cm^3 . Two dimensions are 4 cm and 3 cm. Find the height.

ACTIVITY AND GAME TEACHER KEY

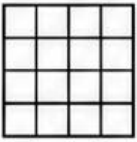
BUILD IT, MEASURE IT, COMPARE IT

- ✓ Card 1: 24 cm^3
- ✓ Card 2: 24 cm^3
- ✓ Card 3: 20 cm^3
- ✓ Card 4: 20 cm^3
- ✓ Card 5: 27 cm^3
- ✓ Card 6: 30 cm^3
- ✓ Card 7: Answers vary. Example: $1 \times 6 \times 6$ and $2 \times 3 \times 6$.
- ✓ Card 8: Answers vary. Example: $3 \times 3 \times 5 = 45 \text{ cm}^3$.

AREA OR VOLUME? SORT AND SCORE

- ✓ A1: area, 24 cm^2
 - ✓ A2: area, 27 cm^2
 - ✓ A3: area, 35 m^2
 - ✓ A4: area, 48 m^2
 - ✓ A5: area, 4×8 is greater by 2 cm^2
 - ✓ A6: area, 7 cm
-
- ✓ V1: volume, 24 cm^3
 - ✓ V2: volume, 30 cm^3
 - ✓ V3: volume, 32 cm^3
 - ✓ V4: volume, 60 cm^3
 - ✓ V5: volume, $2 \times 5 \times 4$ is greater by 4 cm^3
 - ✓ V6: volume, 4 cm

Accept equivalent correct working and explanations.



AREA BY COUNTING SQUARES

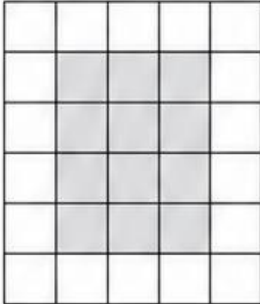


Name: _____

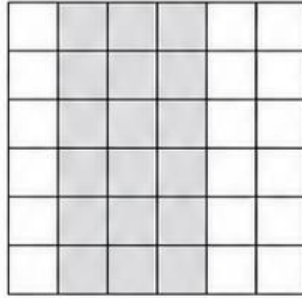
PART A

Count the shaded square units. Write each area.

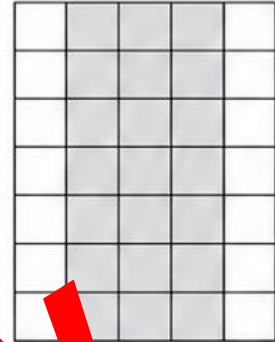
A



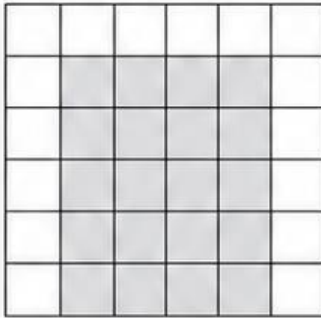
B



C



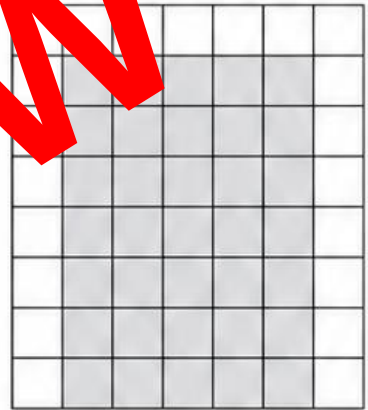
D



E



F



A: _____ square units

B: _____ square units

C: _____ square units

D: _____ square units

E: _____ square units

F: _____ square units

PART B

Use $<$, $>$ or $=$.

A _____ B

C _____ D

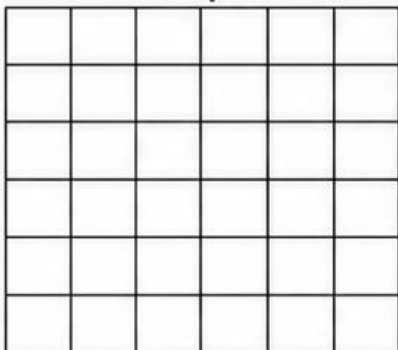
E _____ F

A _____ D

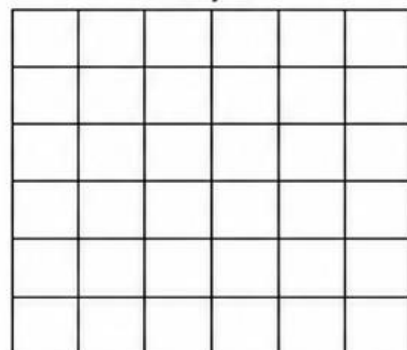
PART C

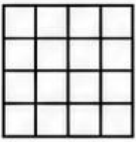
Draw two different shapes. Each shape must have an area of 16 square units.

Shape 1



Shape 2





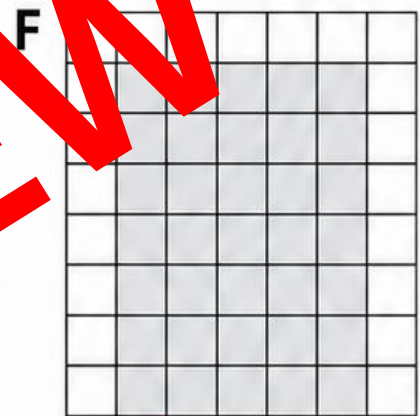
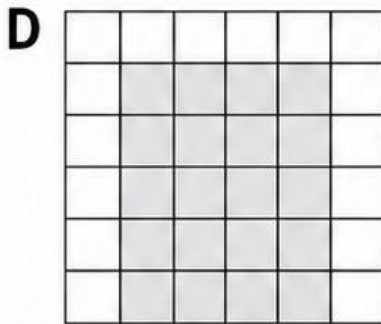
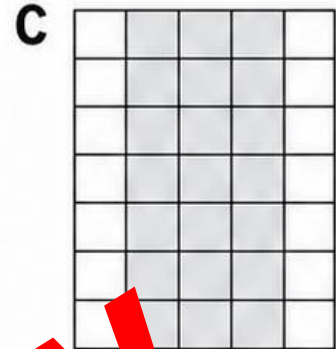
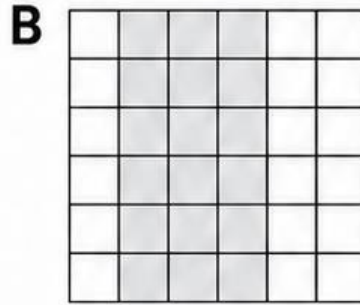
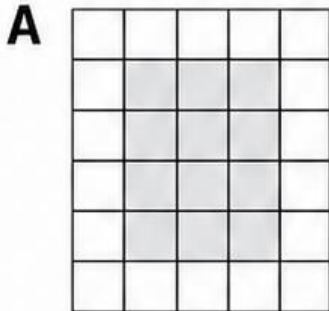
AREA BY COUNTING SQUARES



Name: ANSWERS

PART A

Count the shaded square units. Write each area.



A: 12 square units

B: 18 square units

C: 18 square units

D: 26 square units

E: 20 square units

F: 25 square units

PART B

Use $<$, $>$ or $=$.

A $<$ B

C $<$ D

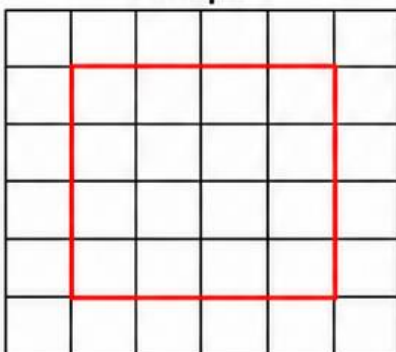
E $<$ F

A $<$ D

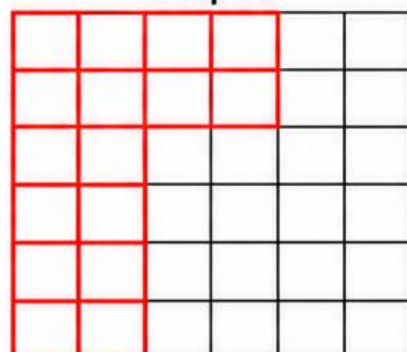
PART C

Draw two different shapes. Each shape must have an area of 16 square units.

Shape 1



Shape 2



AREA FROM LENGTH AND WIDTH

Name: _____



$$\text{length} \times \text{width} = \text{area}$$

PART A

Calculate each area. Show the correct square unit.

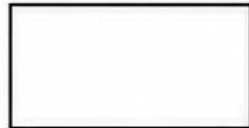
1. $6 \text{ cm} \times 4 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^2$



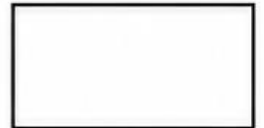
2. $7 \text{ cm} \times 5 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^2$



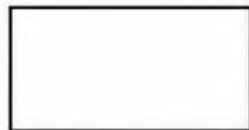
3. $9 \text{ cm} \times 3 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^2$



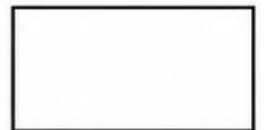
4. $8 \text{ cm} \times 6 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^2$



5. $12 \text{ cm} \times 4 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^2$



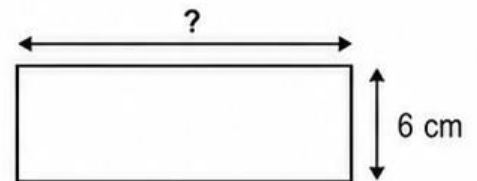
6. $10 \text{ cm} \times 7 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^2$



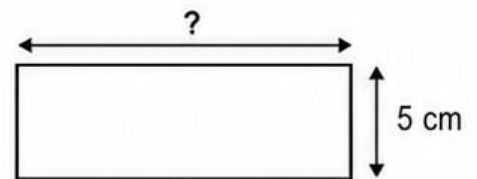
PART B

Find the missing side length.

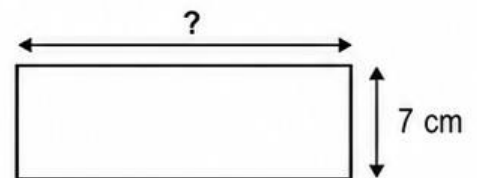
7. Area = 36 cm^2 ; one side = 6 cm ; missing side = $\underline{\hspace{2cm}} \text{ cm}$



8. Area = 45 cm^2 ; one side = 5 cm ; missing side = $\underline{\hspace{2cm}} \text{ cm}$



9. Area = 56 cm^2 ; one side = 7 cm ; missing side = $\underline{\hspace{2cm}} \text{ cm}$

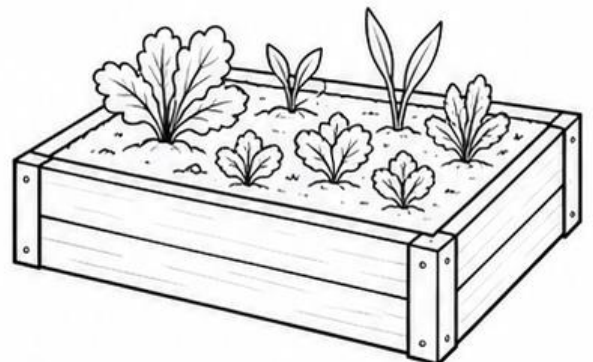


PART C

Garden A is $8 \text{ m} \times 5 \text{ m}$. Garden B is $6 \text{ m} \times 6 \text{ m}$.

Which garden has the greater area? Show your working.

Working:



Answer: _____

AREA FROM LENGTH AND WIDTH

Name: **ANSWERS**



$$\text{length} \times \text{width} = \text{area}$$

PART A

Calculate each area. Show the correct square unit.

1. $6 \text{ cm} \times 4 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^2$

24

2. $7 \text{ cm} \times 5 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^2$

35

3. $9 \text{ cm} \times 3 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^2$

27

4. $8 \text{ cm} \times 6 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^2$

48

5. $12 \text{ cm} \times 4 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^2$

48

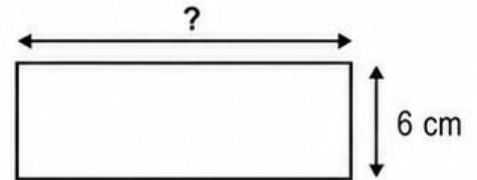
6. $10 \text{ cm} \times 7 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^2$

70

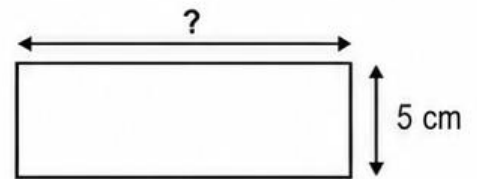
PART B

Find the missing side length.

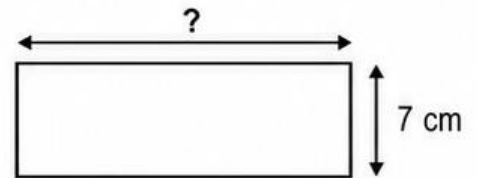
7. Area = 36 cm^2 ; one side = 6 cm ; missing side = **6** cm



8. Area = 45 cm^2 ; one side = 5 cm ; missing side = **9** cm



9. Area = 56 cm^2 ; one side = 7 cm ; missing side = **8** cm



PART C

Garden A is $8 \text{ m} \times 5 \text{ m}$. Garden B is $6 \text{ m} \times 6 \text{ m}$.

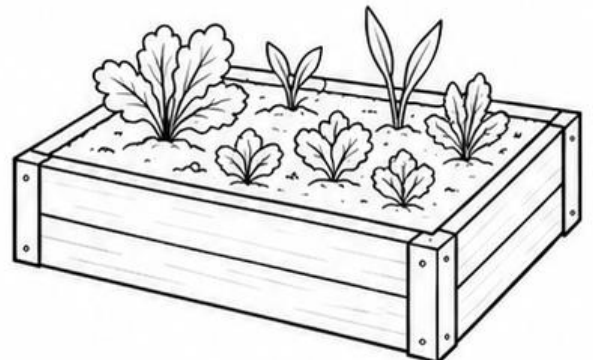
Which garden has the greater area? Show your working.

Working:

Garden A: $8 \times 5 = 40 \text{ m}^2$

Garden B: $6 \times 6 = 36 \text{ m}^2$

Answer: **Garden A has the greater area by 4 m^2 .**



COMPARE AND ORDER AREA

Name: _____



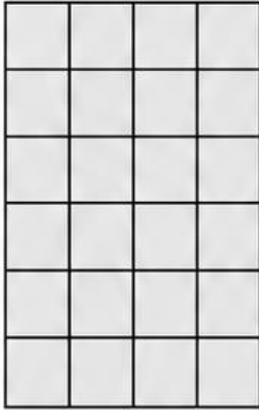
PART A

Count the square units in each shaded rectangle.

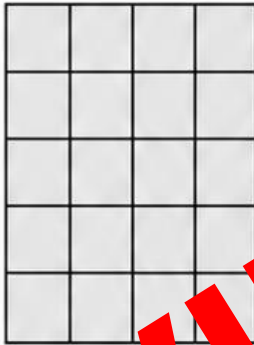
A



B



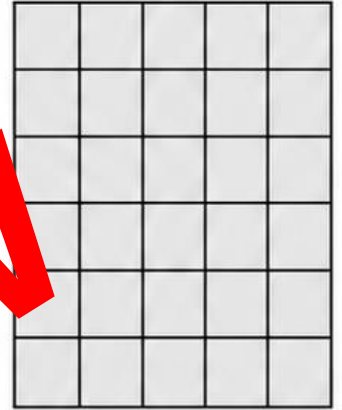
C



D



E



A: _____ square units

B: _____ square units

C: _____ square units

D: _____ square units

E: _____ square units

PART B

Order the shapes from least area to greatest area.

_____ < _____ < _____ < _____ < _____

PART C

Use <, > or =.

A _____ B

C _____ D

B _____ E

A _____ D

C _____ B



COMPARE AND ORDER AREA

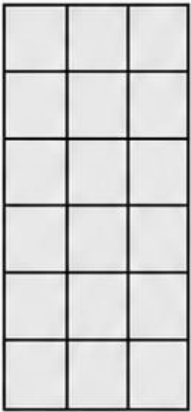
Name: ANSWERS



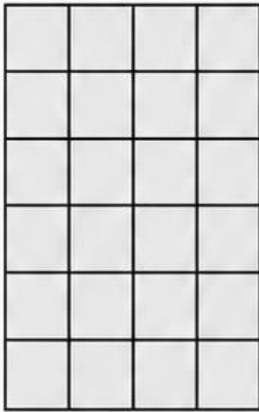
PART A

Count the square units in each shaded rectangle.

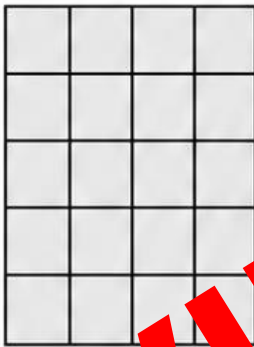
A



B



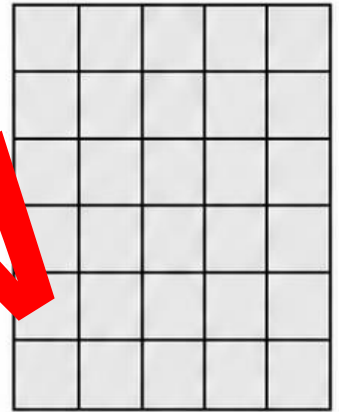
C



D



E



A: 18 square units

B: 24 square units

C: 20 square units

D: 16 square units

E: 30 square units

PART B

Order the shapes from least area to greatest area.

D < A < C < B < E

PART C

Use <, > or =.

A < B

C > D

B < E

A > D

C < B



AREA REASONING IN CONTEXT

Name: _____

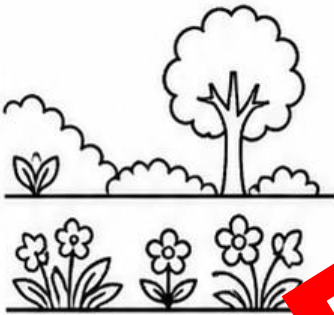
Calculate both areas. Compare them and explain your answer.



1. Bedroom A is $6\text{ m} \times 4\text{ m}$. Bedroom B is $5\text{ m} \times 5\text{ m}$.
Which bedroom has the greater area, and by how much?

Working:

Answer: _____



2. Garden A is $9\text{ m} \times 3\text{ m}$. Garden B is $7\text{ m} \times 4\text{ m}$.
Which garden has the greater area, and by how much?

Working:

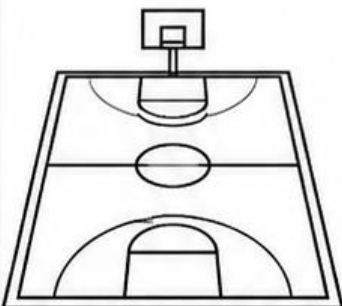
Answer: _____



3. Mural A is $8\text{ m} \times 3\text{ m}$. Mural B is $6\text{ m} \times 5\text{ m}$.
Which mural has the greater area, and by how much?

Working:

Answer: _____



4. Court A is $12\text{ m} \times 5\text{ m}$. Court B is $10\text{ m} \times 6\text{ m}$.
Which court has the greater area? Explain.

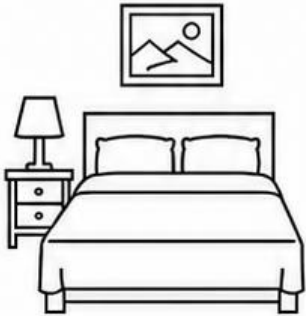
Working:

Answer: _____

AREA REASONING IN CONTEXT

Name: ANSWERS

Calculate both areas. Compare them and explain your answer.

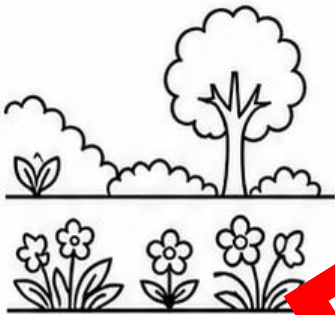


1. Bedroom A is $6 \text{ m} \times 4 \text{ m}$. Bedroom B is $5 \text{ m} \times 5 \text{ m}$.
Which bedroom has the greater area, and by how much?

Working:

$A: 6 \times 4 = 24 \text{ m}^2$; $B: 5 \times 5 = 25 \text{ m}^2$.

Answer: Bedroom B, by 1 m^2 .



2. Garden A is $9 \text{ m} \times 3 \text{ m}$. Garden B is $7 \text{ m} \times 4 \text{ m}$.
Which garden has the greater area, and by how much?

Working:

$A: 9 \times 3 = 27 \text{ m}^2$; $B: 7 \times 4 = 28 \text{ m}^2$.

Answer: Garden B, by 1 m^2 .

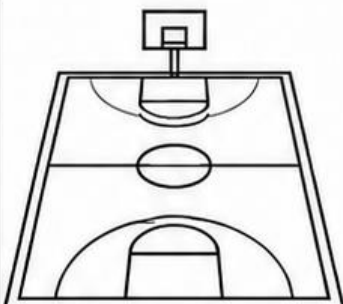


3. Mural A is $8 \text{ m} \times 3 \text{ m}$. Mural B is $6 \text{ m} \times 5 \text{ m}$.
Which mural has the greater area, and by how much?

Working:

$A: 8 \times 3 = 24 \text{ m}^2$; $B: 6 \times 5 = 30 \text{ m}^2$.

Answer: Mural B, by 6 m^2 .



4. Court A is $12 \text{ m} \times 5 \text{ m}$. Court B is $10 \text{ m} \times 6 \text{ m}$.
Which court has the greater area? Explain.

Working:

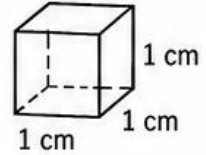
$A: 12 \times 5 = 60 \text{ m}^2$; $B: 10 \times 6 = 60 \text{ m}^2$.

Answer: The courts have equal area.

VOLUME WITH CUBIC UNITS

Name: _____

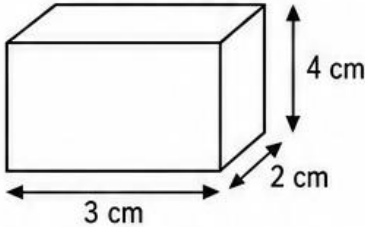
$$\text{length} \times \text{width} \times \text{height} = \text{volume}$$



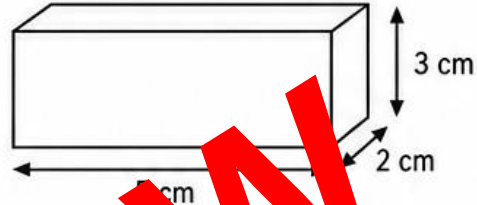
PART A

Calculate each volume. Show the correct cubic unit.

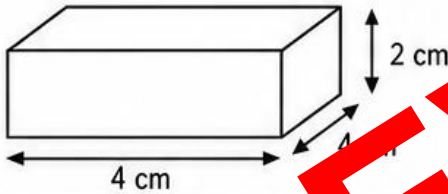
1. $2 \text{ cm} \times 3 \text{ cm} \times 4 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^3$



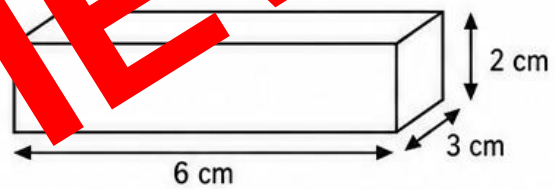
2. $5 \text{ cm} \times 2 \text{ cm} \times 3 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^3$



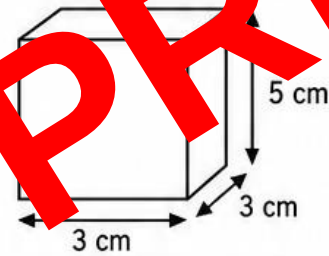
3. $4 \text{ cm} \times 4 \text{ cm} \times 2 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^3$



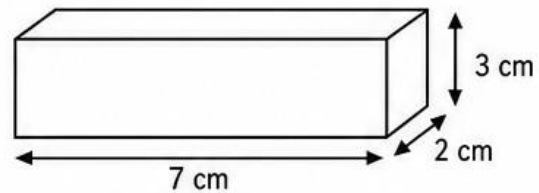
4. $6 \text{ cm} \times 3 \text{ cm} \times 2 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^3$



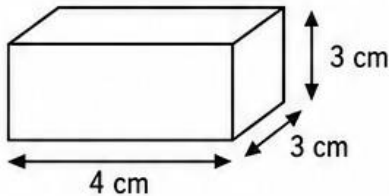
5. $3 \text{ cm} \times 3 \text{ cm} \times 5 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^3$



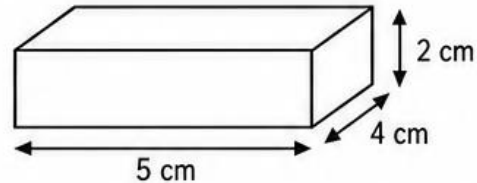
6. $7 \text{ cm} \times 2 \text{ cm} \times 3 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^3$



7. $4 \text{ cm} \times 3 \text{ cm} \times 3 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^3$



8. $5 \text{ cm} \times 4 \text{ cm} \times 2 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}^3$



PART B

Which two prisms have equal volume? _____ and _____

Least volume: Prism _____

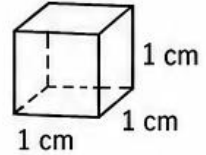
Greatest volume: Prism _____

Explain how you compared the volumes:

VOLUME WITH CUBIC UNITS

Name: ANSWERS

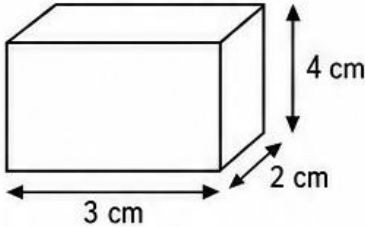
$$\text{length} \times \text{width} \times \text{height} = \text{volume}$$



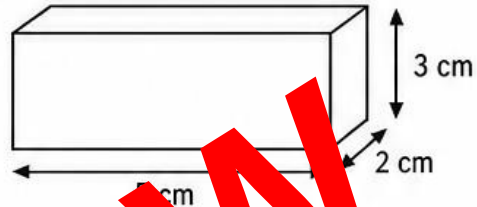
PART A

Calculate each volume. Show the correct cubic unit.

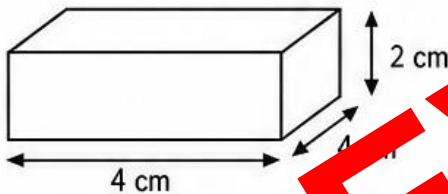
1. $2 \text{ cm} \times 3 \text{ cm} \times 4 \text{ cm} = \underline{24} \text{ cm}^3$



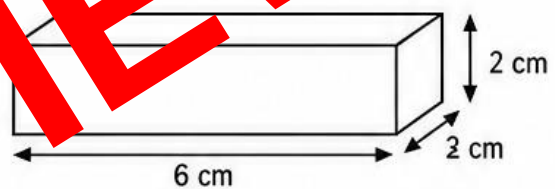
2. $5 \text{ cm} \times 2 \text{ cm} \times 3 \text{ cm} = \underline{30} \text{ cm}^3$



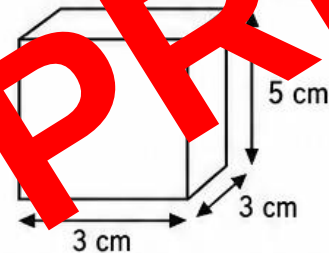
3. $4 \text{ cm} \times 4 \text{ cm} \times 2 \text{ cm} = \underline{32} \text{ cm}^3$



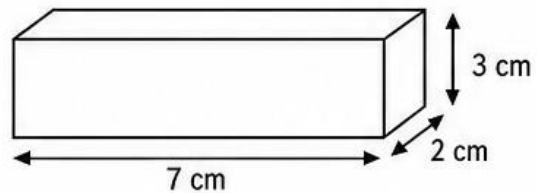
4. $6 \text{ cm} \times 3 \text{ cm} \times 2 \text{ cm} = \underline{36} \text{ cm}^3$



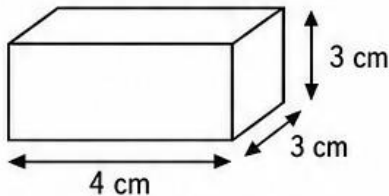
5. $3 \text{ cm} \times 3 \text{ cm} \times 5 \text{ cm} = \underline{45} \text{ cm}^3$



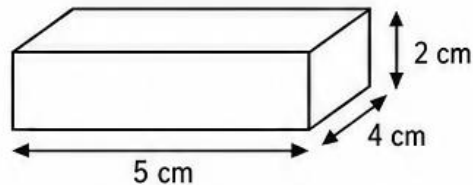
6. $7 \text{ cm} \times 2 \text{ cm} \times 3 \text{ cm} = \underline{42} \text{ cm}^3$



7. $4 \text{ cm} \times 3 \text{ cm} \times 3 \text{ cm} = \underline{36} \text{ cm}^3$



8. $5 \text{ cm} \times 4 \text{ cm} \times 2 \text{ cm} = \underline{40} \text{ cm}^3$



PART B

Which two prisms have equal volume? 4 and 7

Least volume: Prism 1

Greatest volume: Prism 5

Explain how you compared the volumes:

I used length $\times$ width $\times$ height for each prism, then compared the volumes.

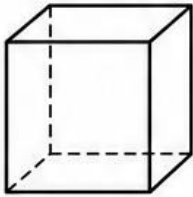
COMPARE AND ORDER VOLUME

Name: _____

PART A

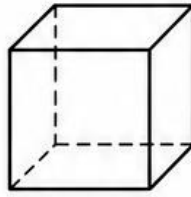
Calculate each volume.

P.



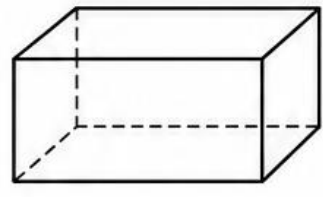
P. $2 \times 2 \times 2 = \underline{\hspace{2cm}} \text{ cm}^3$

Q.



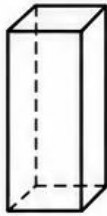
Q. $4 \times 4 \times 4 = \underline{\hspace{2cm}} \text{ cm}^3$

R.



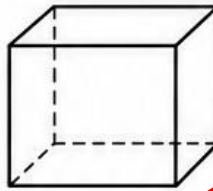
R. $3 \times 5 \times 3 = \underline{\hspace{2cm}} \text{ cm}^3$

S.



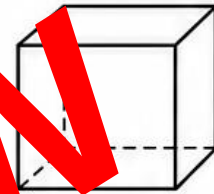
S. $2 \times 8 \times 2 = \underline{\hspace{2cm}} \text{ cm}^3$

T.



T. $5 \times 2 \times 5 = \underline{\hspace{2cm}} \text{ cm}^3$

U.



U. $3 \times 3 \times 4 = \underline{\hspace{2cm}} \text{ cm}^3$

PART B

Order the prisms from least volume to greatest volume. Use = when volumes are equal.

_____ = _____ = _____ < _____ < _____

PART C

Use <, > or =.

P _____ Q

R _____ T

S _____ Q

U _____ P

PART D

Storage Box A is 4 cm × 3 cm × 5 cm.

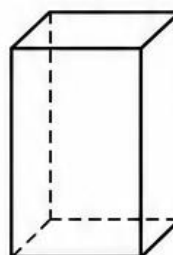
Storage Box B is 6 cm × 2 cm × 4 cm.

Which box holds more, and by how many cubic centimetres?

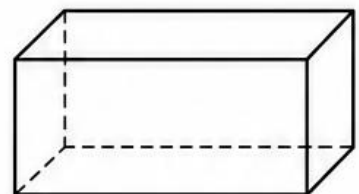
Working:

Answer: _____

Storage Box A



Storage Box B



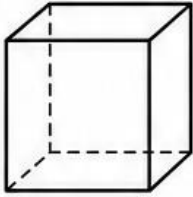
COMPARE AND ORDER VOLUME

Name: **ANSWERS**

PART A

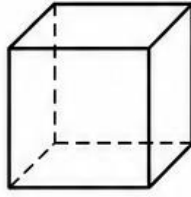
Calculate each volume.

P.



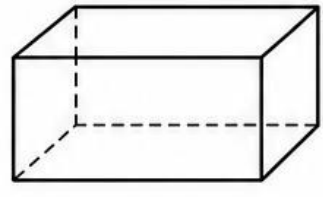
P. $2 \times 2 \times 2 = \underline{8} \text{ cm}^3$

Q.



Q. $4 \times 4 \times 4 = \underline{64} \text{ cm}^3$

R.



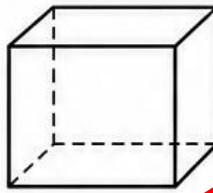
R. $3 \times 5 \times 3 = \underline{45} \text{ cm}^3$

S.



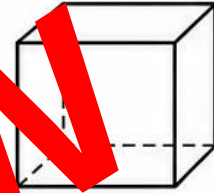
S. $2 \times 8 \times 2 = \underline{32} \text{ cm}^3$

T.



T. $5 \times 2 \times 5 = \underline{50} \text{ cm}^3$

U.



U. $3 \times 3 \times 4 = \underline{36} \text{ cm}^3$

PART B

Order the prisms from least volume to greatest volume. Use = when volumes are equal.

Q = S < U < R < T

PART C

Use <, >, or =.

P **>** Q

R **<** T

S **=** Q

U **=** P

PART D

Storage Box A is 4 cm × 3 cm × 5 cm.

Storage Box B is 6 cm × 2 cm × 4 cm.

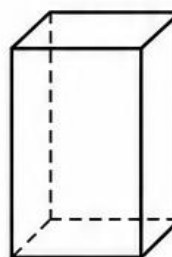
Which box holds more, and by how many cubic centimetres?

Working:

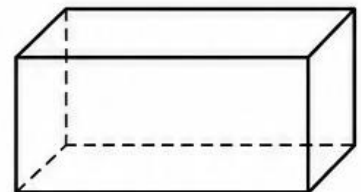
Box A: $4 \times 3 \times 5 = 60 \text{ cm}^3$

Box B: $6 \times 2 \times 4 = 48 \text{ cm}^3$

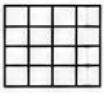
Storage Box A



Storage Box B



Answer: **Storage Box A holds 12 cm³ more.**



AREA AND VOLUME ASSESSMENT - PAGE 1



Name: _____

Date: _____

PART A: CONCEPTS AND UNITS

1. Area measures the _____ covered by a flat shape.
2. Volume measures the _____ occupied by a 3D object.
3. Circle the best unit for the area of a classroom floor.

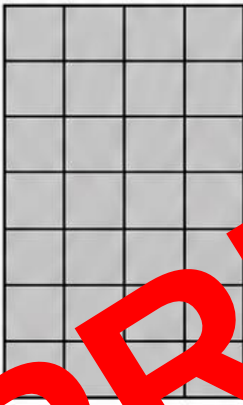
cm^3 m^2 cm

4. Circle the best unit for the volume of a small cube model.

cm^2 cm^3 m

PART B: AREA

5. Count the square units in the shaded rectangle.



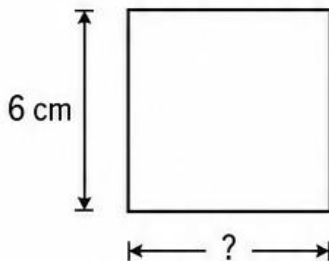
Area = _____ square units

6. A rectangle is 7 cm x 4 cm. Find its area.



Area = _____ cm^2

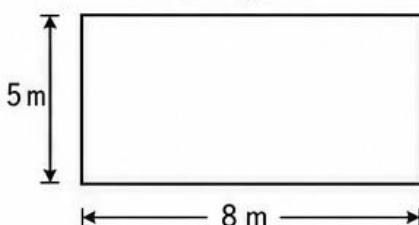
7. A rectangle has an area of 48 cm^2 . One side is 6 cm. Find the other side.



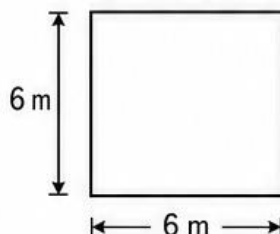
Missing side = _____ cm

8. Rectangle A is 5 m x 8 m. Rectangle B is 6 m x 6 m.
Which rectangle has the greater area, and by how much?

Rectangle A

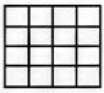


Rectangle B



Working:

Answer: _____



AREA AND VOLUME ASSESSMENT - PAGE 1



Name: **ANSWERS**

Date: _____

PART A: CONCEPTS AND UNITS

- Area measures the **surface** covered by a flat shape.
- Volume measures the **space** occupied by a 3D object.
- Circle the best unit for the area of a classroom floor.

cm^3

m^2

cm

- Circle the best unit for the volume of a small cube model.

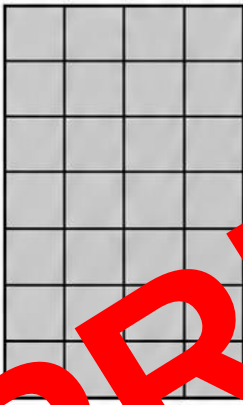
cm^2

cm^3

m

PART B: AREA

- Count the square units in the shaded rectangle.



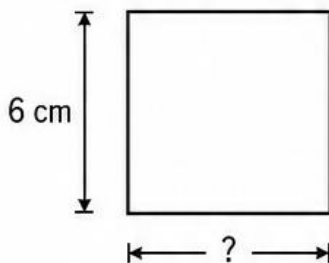
Area = **24** square units

- A rectangle is 7 cm x 4 cm. Find its area.



Area = **28** cm^2

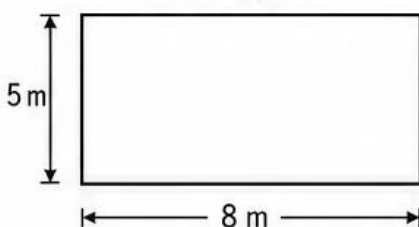
- A rectangle has an area of 48 cm^2 . One side is 6 cm. Find the other side.



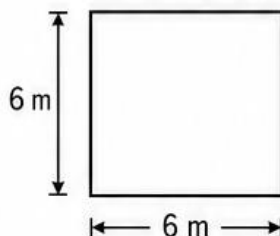
Missing side = **8** cm

- Rectangle A is 5 m x 8 m. Rectangle B is 6 m x 6 m.
Which rectangle has the greater area, and by how much?

Rectangle A



Rectangle B



Working:

Rectangle A: $5 \times 8 = 40 \text{ m}^2$

Rectangle B: $6 \times 6 = 36 \text{ m}^2$

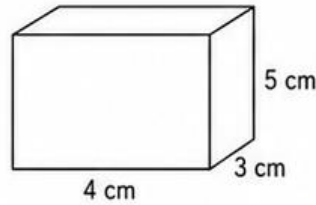
Answer: **Rectangle A has the greater area by 4 m^2 .**

AREA AND VOLUME ASSESSMENT - PAGE 2

Name: _____

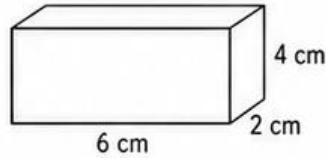
PART C: VOLUME

9. A prism is $3\text{ cm} \times 4\text{ cm} \times 5\text{ cm}$. Find its volume.



Volume = _____ cm^3

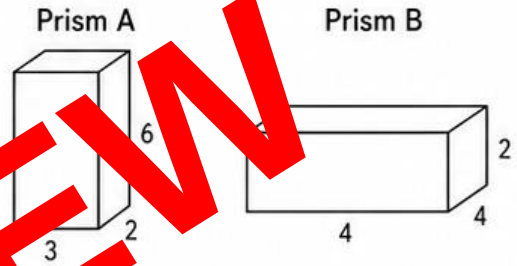
10. A box is $6\text{ cm} \times 2\text{ cm} \times 4\text{ cm}$. Find its volume.



Volume = _____ cm^3

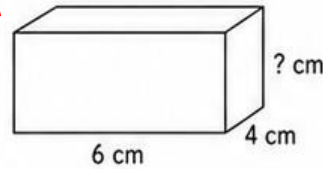
11. Prism A is $2 \times 3 \times 6$. Prism B is $4 \times 4 \times 2$.
Which prism has the greater volume, and by how much?

Working:



Answer: _____

12. A prism has a volume of 72 cm^3 . Its length is 6 cm and its width is 4 cm . Find its height.

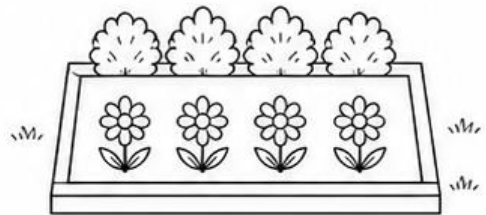


Height = _____ cm

PART D: APPLY AND EXPLAIN

13. A garden bed is $10\text{ m} \times 5\text{ m}$. A flower bed is $6\text{ m} \times 6\text{ m}$.
Which has the greater area, and by how much?

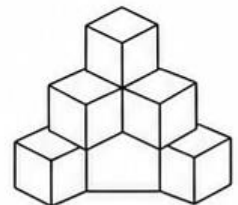
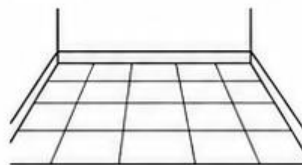
Working:



Answer: _____

14. Circle AREA or VOLUME.

- a. Tiles needed to cover a floor: AREA VOLUME
b. Cubes needed to fill a model: AREA VOLUME



15. Draw a rectangle with an area of 48 square units.
Label its dimensions.

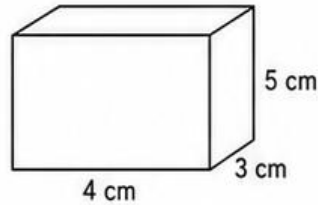
16. Draw a cuboid with a volume of 48 cubic units.
Label its dimensions.

AREA AND VOLUME ASSESSMENT - PAGE 2

Name: ANSWERS

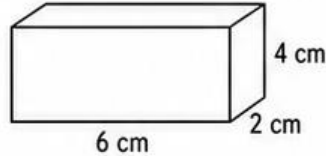
PART C: VOLUME

9. A prism is 3 cm × 4 cm × 5 cm. Find its volume.



Volume = 60 cm³

10. A box is 6 cm × 2 cm × 4 cm. Find its volume.



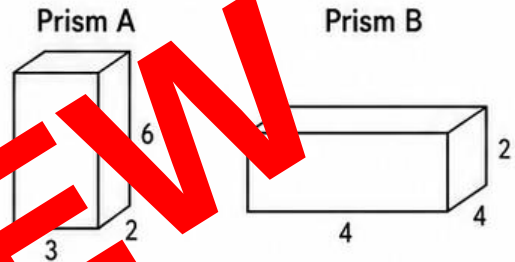
Volume = 48 cm³

11. Prism A is 2 × 3 × 6. Prism B is 4 × 4 × 2.
Which prism has the greater volume, and by how much?

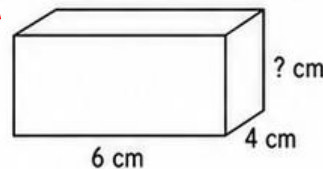
Working: **Prism A: $2 \times 3 \times 6 = 36$ cm³;**

Prism B: $4 \times 4 \times 2 = 32$ cm³.

Answer: Prism A, by 4 cm³.



12. A prism has a volume of 72 cm³. Its length is 6 cm and its width is 4 cm. Find its height.



Height = 3 cm

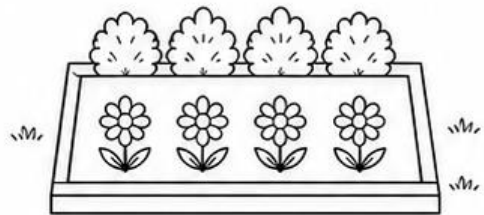
PART D: APPLY AND EXPLAIN

13. A garden bed is 8 m × 5 m. A flower bed is 6 m × 6 m.
Which has the greater area, and by how much?

Working: **Garden bed: $8 \times 5 = 40$ m²;**

flower bed: $6 \times 6 = 36$ m².

Answer: The garden bed, by 4 m².



14. Circle AREA or VOLUME.

a. Tiles needed to cover a floor:

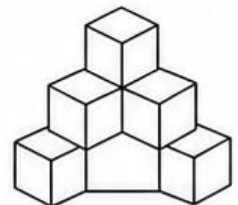
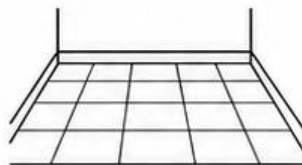
AREA

VOLUME

b. Cubes needed to fill a model:

AREA

VOLUME



15. Draw a rectangle with an area of 48 square units.
Label its dimensions.

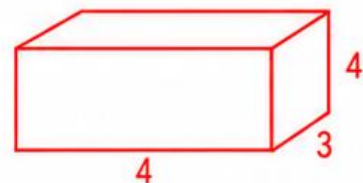
6 units



8 units

$6 \times 8 = 48$ square units

16. Draw a cuboid with a volume of 48 cubic units.
Label its dimensions.

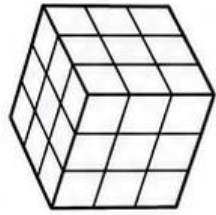
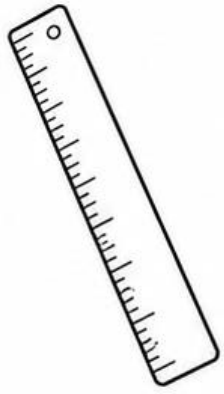


$4 \times 4 \times 3 = 48$ cubic units

COMPARING AREA AND VOLUME RUBRIC

Student: _____ Teacher: _____ Date: _____

CRITERION	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
Area concept	Needs support to recognise area.	Recognises area in familiar tasks.	Explains area as surface covered.	Connects area to square units.	Applies area ideas flexibly.
Area calculations	Counts some squares with support.	Calculates simple areas with prompts.	Uses length $\times$ width accurately.	Finds missing sides and compares.	Solves complex area problems.
Volume concept	Needs support to recognise volume.	Recognises volume in familiar tasks.	Explains volume as space occupied.	Connects volume to cubic units.	Applies volume ideas flexibly.
Volume calculations	Counts some cubes with support.	Calculates simple volumes with prompts.	Uses length $\times$ width $\times$ height accurately.	Finds missing dimensions and compares.	Solves complex volume problems.
Compare and order	Needs support to compare measures.	Compares with models or prompts.	Compares and orders accurately.	Explains differences and equal values.	Justifies comparisons efficiently.
Reasoning and units	Working and units are often missing.	Shows some working and correct units.	Shows clear working and correct units.	Explains strategies using correct units.	Communicates precise, convincing reasoning.



Comparing Area and Volume



What Are We Comparing?

- Area measures the surface of a flat shape.
- Volume measures the space inside a 3D object.
- Perimeter is found by measuring and calculating.



Area: Covering a Surface

- Imagine covering a shape with equal squares.
- Count every square with no gaps or overlaps.
- Record the answer in square units.



Count Square Units

1. Count the squares across each row.

2. Count the number of rows.

3. Multiply: $6 \times 4 = 24 \text{ cm}^2$.



Area Formula

$$\text{AREA} = \text{length} \times \text{width}$$

Measure the two side lengths.

Multiply, then label the answer with a square unit.



Choose the Area Unit

- cm² for small surfaces, such as a book cover.
- m² for large surfaces, such as a floor.
- The small ² means square units.



Calculate Area

Rectangle A: $7 \times 3 = 21 \text{ cm}^2$

Rectangle B: $8 \times 5 = 40 \text{ m}^2$

Formula, calculation and unit all matter.



Compare Areas

1. Calculate both areas using the same unit.
2. Compare the values using $<$, $>$ or $=$.
3. State which surface is greater and by how much.



Order Areas

Write each calculated area beside its shape.

Arrange the values from least to greatest.

Use = when two shapes have equal area.



Area Reasoning

Bedroom A: $6 \times 4 = 24 \text{ m}^2$

Bedroom B: $5 \times 5 = 25 \text{ m}^2$

Bedroom B has the greater area by 1 m^2 .



Volume: Filling space

- Volume is the space occupied by a 3D object.
- Fill the object with equal cubes.
- Record the answer in cubic units.



Count Cubic Units

Count cubes in one layer, then count the layers.

4×3 cubes per layer $\times$ 2 layers

Volume = 24 cm^3 .



Volume Formula

$\text{Volume} = \text{length} \times \text{width} \times \text{height}$

Use three perpendicular dimensions.

Simply, then label the answer with a cubic unit.



Calculate Volume

Prism A: $5 \times 2 \times 3 = 30 \text{ cm}^3$

Prism B: $7 \times 2 \times 3 = 42 \text{ cm}^3$

Check that all three dimensions were used.



Choose the Volume Unit

- cm^3 for small objects and models.
- m^3 for rooms and large containers.
- The small ^{3} means cubic units.



Compare Volumes

$$\text{Box A: } 4 \times 3 \times 5 = 60 \text{ cm}^3$$

$$\text{Box B: } 6 \times 2 \times 4 = 48 \text{ cm}^3$$

Box A holds 12 cm^3 more.



Order Volumes

Calculate each prism first.

Sort the volumes from least to greatest.

Show equal volumes with an = sign.



Area or Volume?

Ask: Am I covering a surface or filling a space?

Surface → area → square units

Space → volume → cubic units



Build and Compare

Build two cuboids with centimetre cubes.

Record length, width, height and volume.

Compare with $<$, $>$ or $=$ and explain the result.



Sort and Score

Read task card and decide: AREA or VOLUME.

Calculate carefully and use the correct unit.

Score one point for the zone and one for the answer.



Avoid Common Mix-ups

- Area uses two dimensions; volume uses three.
- Area units are squared; volume units are cubed.
- Always include the correct unit in the answer.



Worked Challenge

A prism has volume 72 cm^3 .

Length = 6 cm and width = 4 cm.

Height = $72 \div (6 \times 4) = 3 \text{ cm}$.



Explain Your Thinking

1. Label the measurement and formula.
2. Substitute the known dimensions.
3. Calculate, compare and write a clear conclusion.



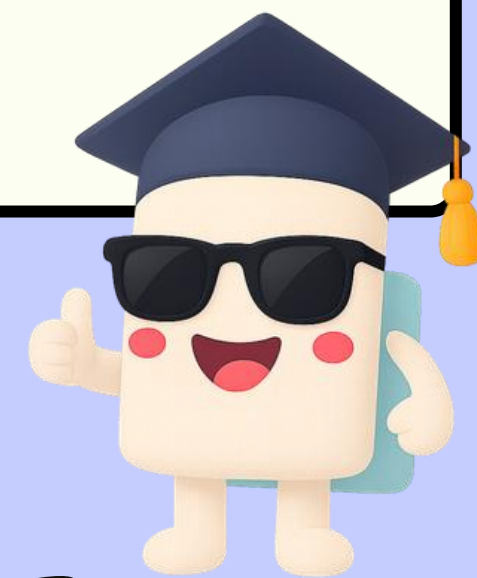
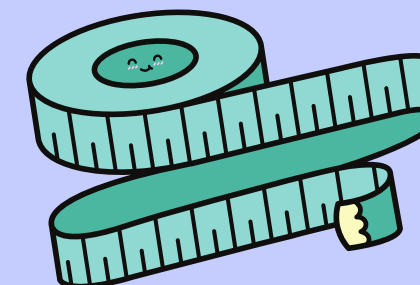
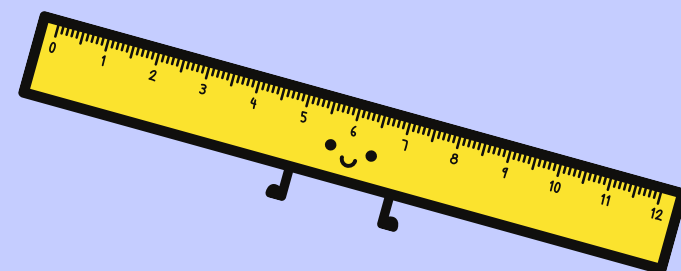
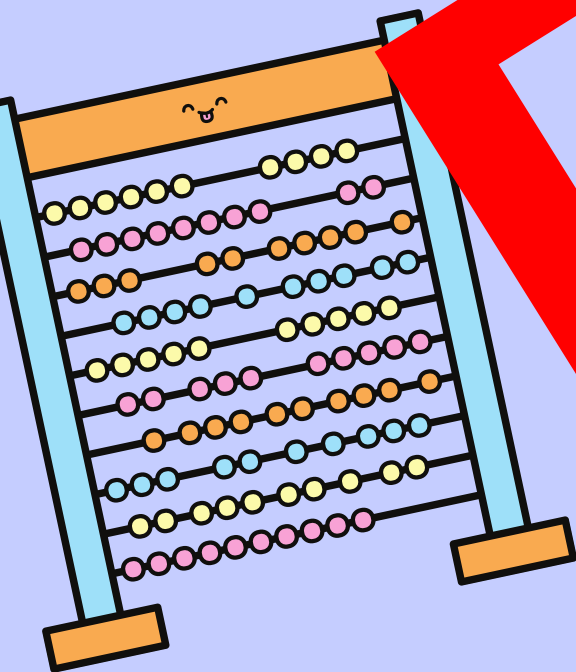
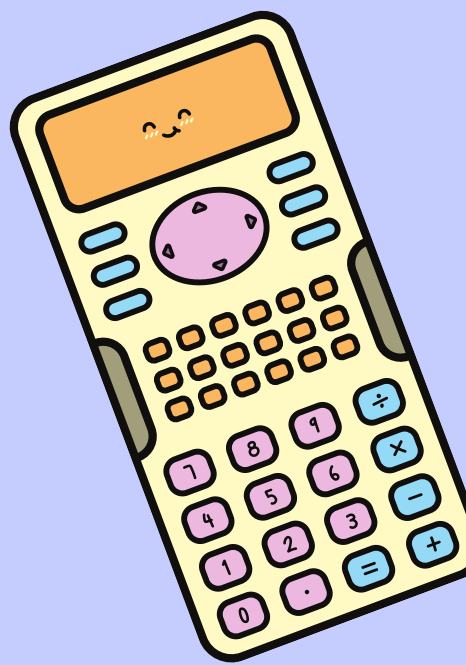
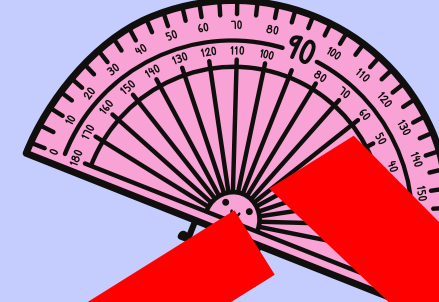
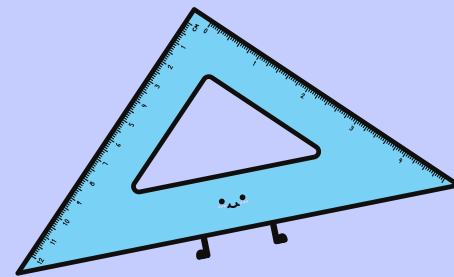
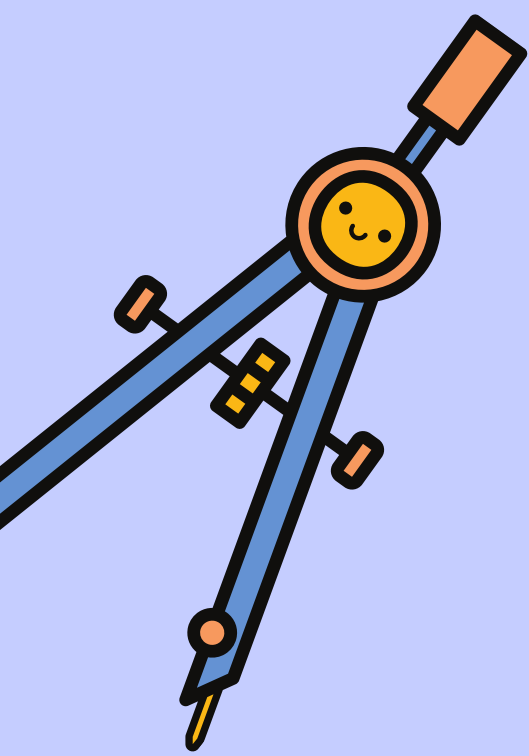
Review

AREA: surface, length $\times$ width, square units.

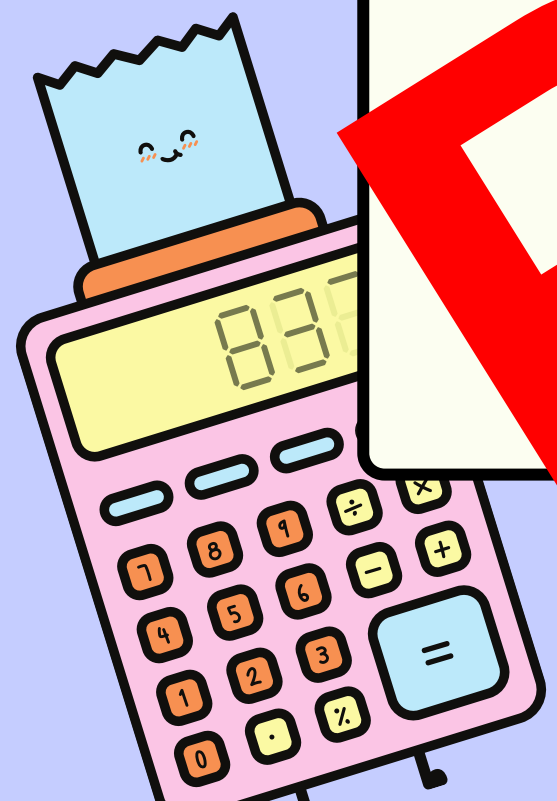
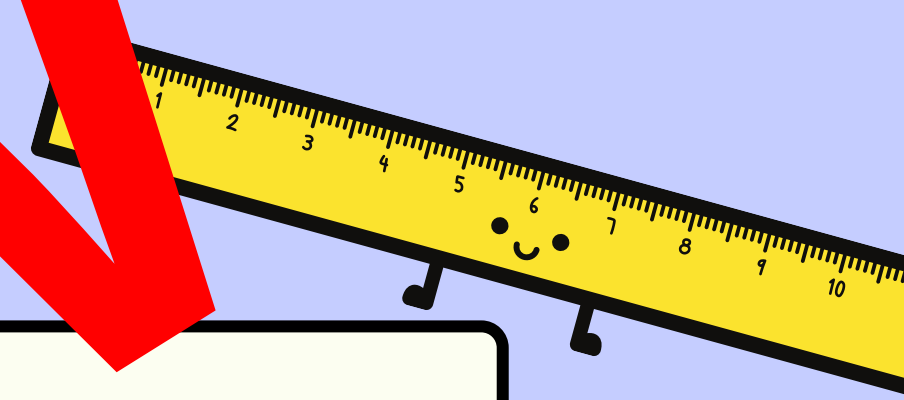
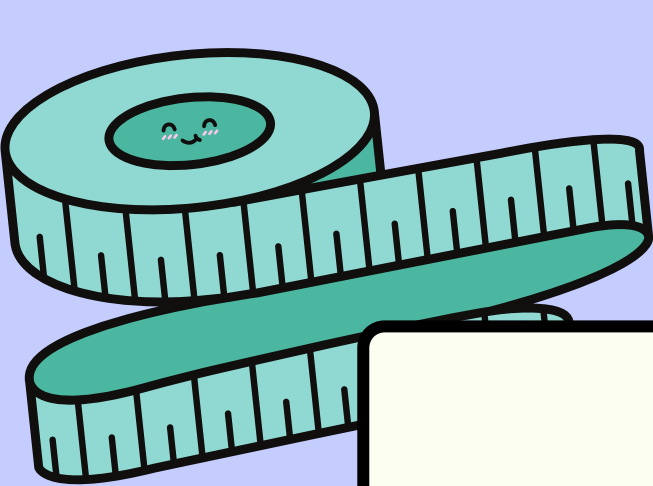
VOLUME: space, length $\times$ width $\times$ height, cubic units.

Calculate first. Compare second. Explain last.





Well Done!



PREVIEW

Comparing Area and Volume Quiz

Question 1 • Multiple Choice

What is the area of a 6 cm by 4 cm rectangle?

- A. 3 cm² B. 20 cm²
C. 24 cm² D. 28 cm²



Answer

C. 24 cm^2

Area = length $\times$ width

$$6 \times 4 = 24 \text{ cm}^2$$



Question 2 · True or False

Area measures the surface of a flat shape
and is recorded in cubic units.

TRUE or FALSE?



Answer

FALSE

Area does measure a surface, but it is recorded in square units such as cm^2 or m^2 .



Question 3 · Short Answer

Find the area of a rectangle measuring 7 cm by 5 cm.

Show the formula and unit.



Answer

Area = length $\times$ width

$$7 \times 5 = 35$$

$$\text{Area} = 35 \text{ cm}^2$$



Question 4 · Multiple Choice

Which unit is best for the area of a classroom floor?

- A. cm B. cm^2
C. m^2 D. cm^3



Answer

C. m^2

A classroom floor is a large surface,
so square metres are appropriate.



Question 5 · True or False

A $4 \times 2 \times 2$ prism and a $6 \times 2 \times 2$ prism
have equal volume.

TRUE or FALSE?



Answer

TRUE

$$3 \times 2 = 24 \text{ cm}^3$$

$$6 \times 2 \times 2 = 24 \text{ cm}^3$$



Question 6 · Reasoning

Bedroom A is $6\text{ m} \times 4\text{ m}$.

Bedroom B is $5\text{ m} \times 5\text{ m}$.

Which has greater area, and by how much?



Answer

$$A: 6 \times 4 = 24 \text{ m}^2$$

$$B: 5 \times 5 = 25 \text{ m}^2$$

Bedroom B is greater by 1 m^2 .



Question 7 · Multiple Choice

What is the volume of a 5 cm $\times$ 2 cm $\times$ 3 cm prism?

- A. 5 cm³ B. 20 cm³
C. 30 cm³ D. 60 cm³



Answer

C. 30 cm^3

Volume = length $\times$ width $\times$ height

$$5 \times 2 \times 3 = 30 \text{ cm}^3$$



Question 8 · True or False

A cuboid with dimensions $5\text{ cm} \times 5\text{ cm} \times 2\text{ cm}$
has a volume of 50 cm^3 .

TRUE or FALSE?



Answer

TRUE

$$5 \times 5 \times 2 = 50$$

The volume is 50 cm^3 .



Question 9 · Short Answer

A rectangular prism has volume 72 cm^3 , length 6 cm
and width 4 cm . Find its height.



Answer

$$\text{Height} = 72 \div (6 \times 4)$$

$$\text{Height} = 72 \div 24$$

$$\text{Height} = 3 \text{ cm}$$



Question 10 • Reasoning

Order the volumes from least to greatest:

$$P = 16 \text{ cm}^2 \quad Q = 32 \text{ cm}^3 \quad R = 45 \text{ cm}^3$$

Use < signs.

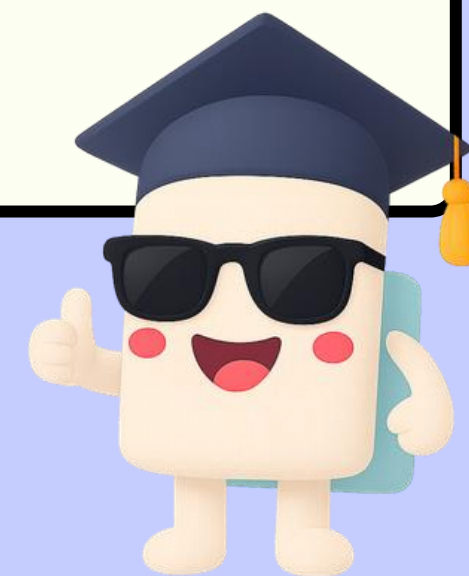
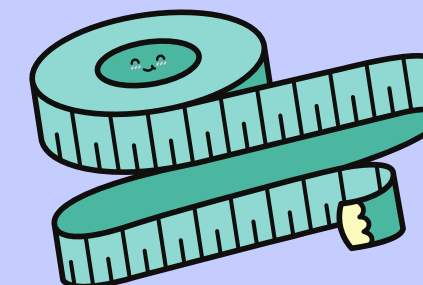
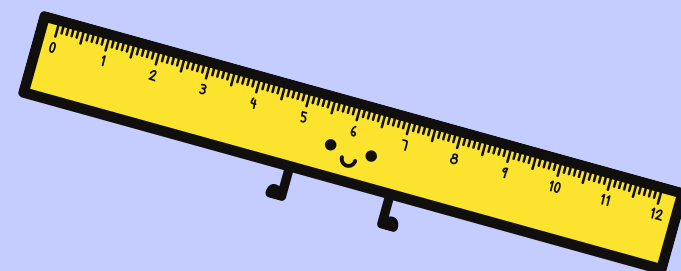
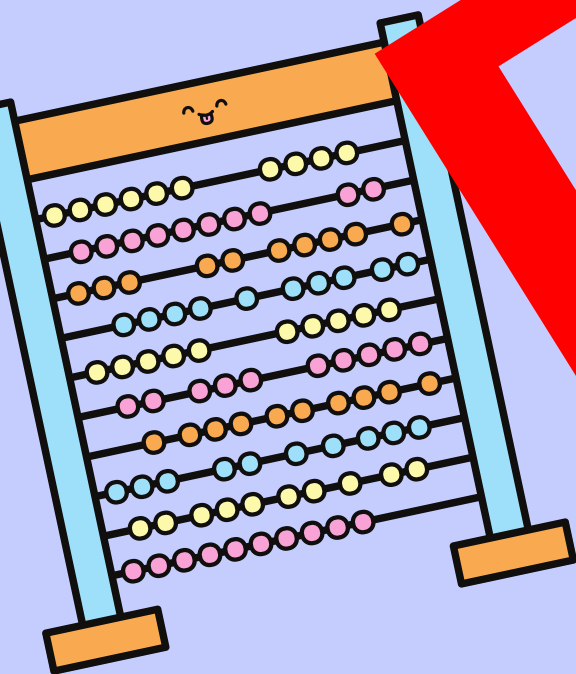
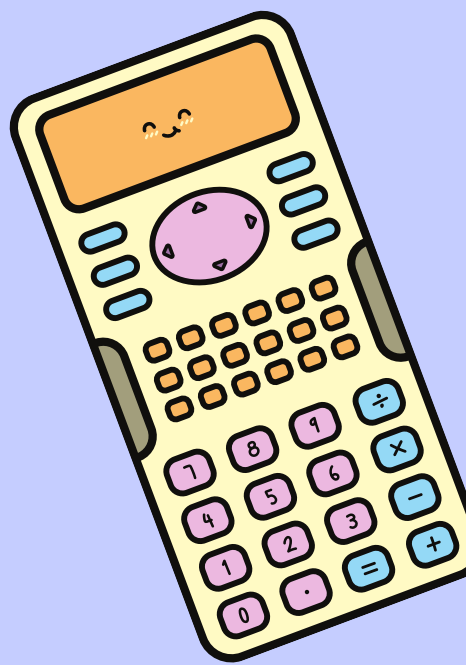
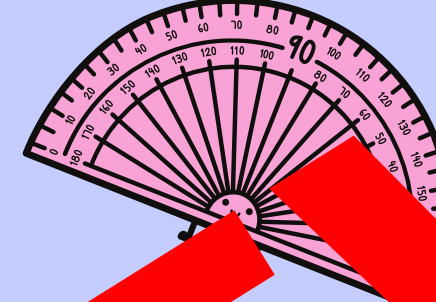
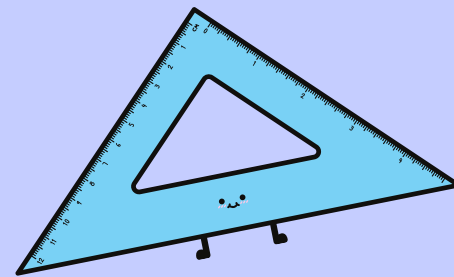
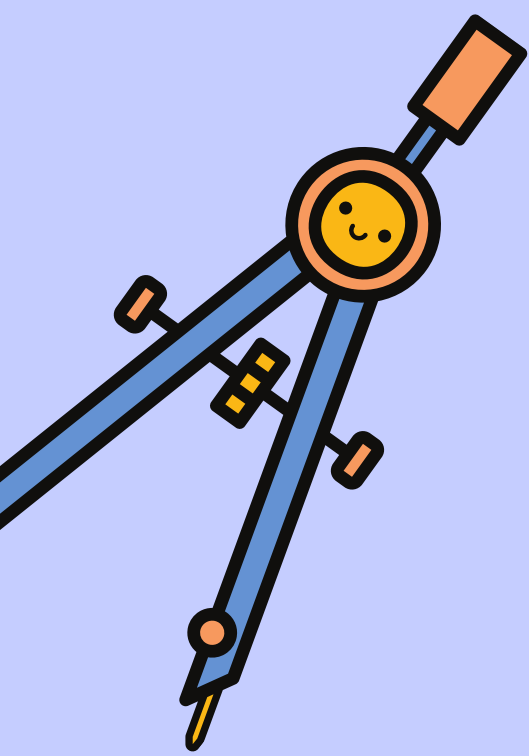


Answer :

$$Q < P < R$$

$$27 \text{ cm}^3 < 36 \text{ cm}^3 < 45 \text{ cm}^3$$





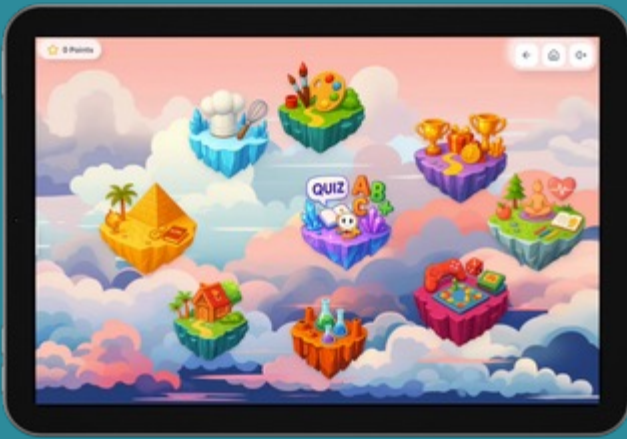
Well Done!

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Year 4 Measurement

Table of Contents	
Presentation: Year 4 Measurement	
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Worksheet: Estimating Partial Units	
Worksheet: Scaled and Digital Instruments	
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Game: Scale Detective	
Quiz: Year 4 Measurement	
Assessment: Unmarked and Partial Unit Measurement	
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Measuring Unmarked and Partial Units

1

Unmarked scales

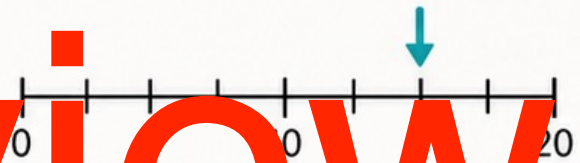
numbers may be missing, but the marks are evenly spaced.



2

Partial units

a value can sit between two marks and may not be exactly on a labelled number.



3

Read an unmarked scale

- 1 find the start and end values
- 2 count the equal spaces
- 3 divide to find one interval
- 4 count intervals to the measurement point



4

Common measuring units



Length: mm, cm, m



Mass: g, kg



Capacity: mL, L



Duration: seconds, minutes, hours



Temperature: °C



Check that the unit and the answer make sense.

Measuring Unmarked and Partial Units

Unmarked scales

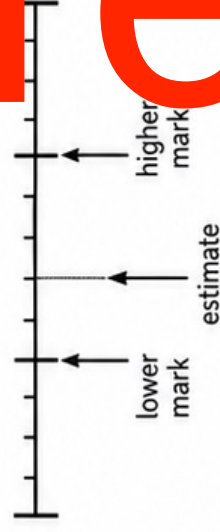
numbers may be missing; spaces are evenly spaced.

To measure

- 1 Count the number of equal spaces.
- 2 Find the value of one space.
- 3 Count the intervals to the measurement point.

Partial units

values sit between two marks. Estimate using the nearest marks and the fraction of one interval.



Common tools and units



Length: ruler/tape measure (mm, cm, m)



Mass: scales (g, kg)



Capacity: measuring jug (mL, L)



Duration: clock/stoptwatch (seconds, minutes, hours)



Temperature: thermometer (°C)

Measuring Unmarked and Partial Units

Unmarked scales

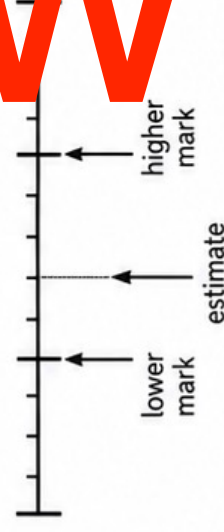
numbers may be missing; spaces are evenly spaced.

To measure

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- 3 Count the intervals to the measurement point.

Partial units

values sit between two marks. Estimate using the nearest marks and the fraction of one interval.



Common tools and units



Length: ruler/tape measure (mm, cm, m)



Mass: scales (g, kg)



Capacity: measuring jug (mL, L)



Duration: clock/stoptwatch (seconds, minutes, hours)



Temperature: thermometer (°C)

Name: _____

Interpreting Unmarked Scales

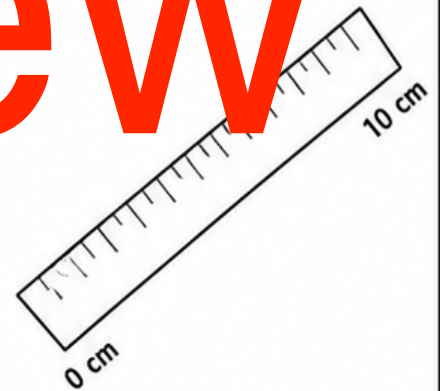
Part A – Length (cm)

The ruler starts at 0cm and ends at 10cm. There are 10 equal spaces.

The marker points to the 6th space. What is the length? _____ cm

The marker points to the 9th space. What is the length? _____ cm

The marker points to the 3rd space. What is the length? _____ cm



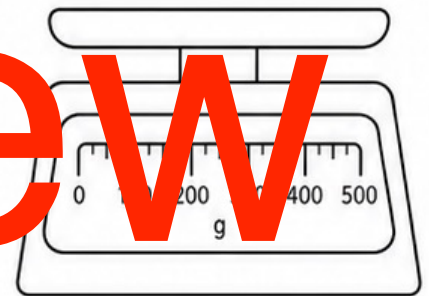
Part B – Mass (g)

The scale starts at 0g and ends at 500g. There are 5 equal spaces.

The marker points to the 2nd space. What is the mass? _____ g

The marker points to the 5th space. What is the mass? _____ g

The marker points to the 4th space. What is the mass? _____ g



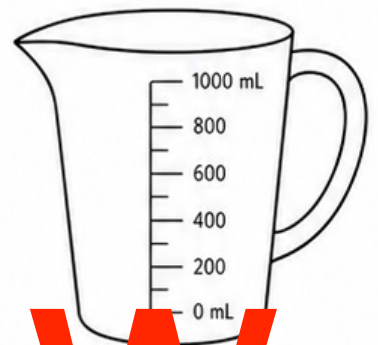
Part C – Capacity (mL)

The jug scale starts at 0mL and ends at 1000mL. There are 10 equal spaces.

The marker points to the 7th space. What is the capacity? _____ mL

The marker points to the 5th space. What is the capacity? _____ mL

The marker points to the 2nd space. What is the capacity? _____ mL



Part D – Duration (minutes)

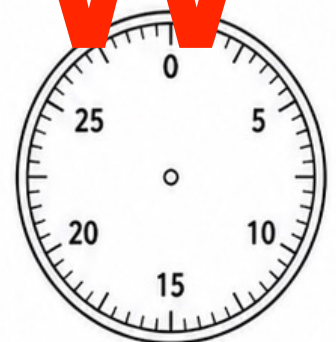
The timer scale starts at 0 minutes and ends at 30 minutes.

There are 6 equal spaces.

The marker points to the 1st space. What is the time? _____ minutes

The marker points to the 4th space. What is the time? _____ minutes

The marker points to the 6th space. What is the time? _____ minutes



Name: _____

Scaled and Digital Instruments

Part A – Scaled Instruments (Read the Scale)

Length (cm) A ruler starts at 0 cm and ends at 20 cm with 10 equal spaces.

1. The marker points to the 7th space. What is the length? _____ cm
2. The marker is halfway between the 12 cm and 14 cm mark. What is the length? _____ cm

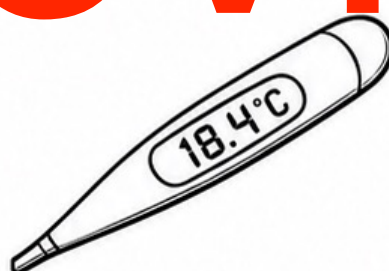
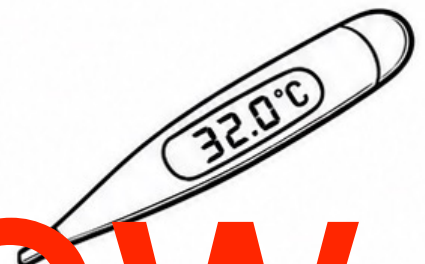
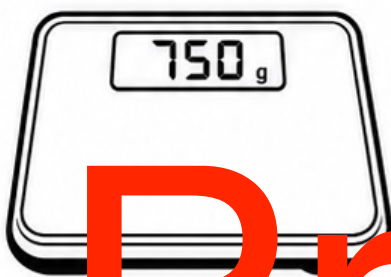
Mass (kg) A scale starts at 0 kg and ends at 10 kg with 10 equal spaces.

1. The marker points to the 6th space. What is the mass? _____ kg
2. The marker points to one quarter of the way from 7 kg to 8 kg. What is the mass? _____ kg

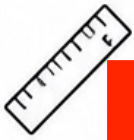
Capacity (L) A jug starts at 0 L and ends at 2 L with 10 equal spaces.

1. The marker points to the 5th space. What is the capacity? _____ L
2. The marker points to halfway between 1.25 L and 1.5 L. What is the capacity? _____ L

Part B – Digital Instruments: Read the display and write the measurement using the correct unit.



Name: _____



Comparing and Reasoning



Preview

Part A — Compare Measurements

1

A length is measured as 6.5 cm.
Another length is measured as 6.75 cm.
Which length is longer?

2

A mass is measured as 425 g.
Another mass is measured as 0.45 kg.
Which mass is heavier?

3

A container holds 1.2 L of water.
Another container holds 1150 mL of water.
Which container holds more?

4

One runner completes a race in 2 minutes 40 seconds.
Another runner completes the race in 165 seconds.
Who is faster?

Preview

Part B — Reason About Unmarked and Partial Units

1

A thermometer shows a reading halfway between 18°C and 20°C.
What is the temperature?

2

A jug shows a reading three quarters of the way between 600 mL and 800 mL.
What is the capacity?

3

A scale has marks every 200 g. The marker is just past the 600 g mark, about one quarter of the way to 800 g.
What is the mass?

Part C — Explain Your Thinking

1

Explain how you know when an object is heavier than another.

2

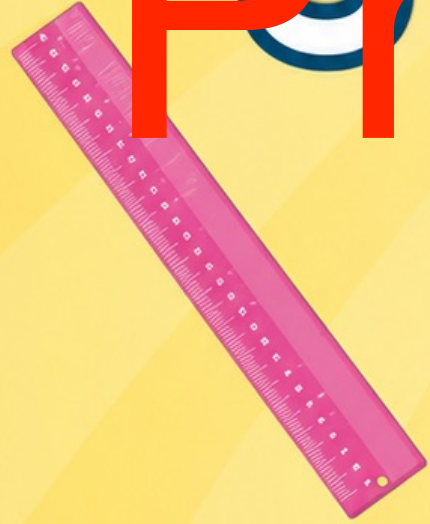
Explain how you estimate a measurement that sits between two marks on a scale.

3

Why is it important to check whether a measurement makes sense?

Preview

Estimate and Compare Relay



Teacher Instructions

1. Place students in pairs.
2. Give each pair:
 - One shuffled Measurement Card deck
 - One shuffled Comparison Card deck
 - One recording sheet
3. Students play the game. In each round:
 - Draw 4 Measurement Cards
 - Order them from smallest to largest
 - Draw 1 Comparison Card
 - Write a short explanation
4. One point is earned if:
 - Correct order
 - Correct comparison explanation

Student Instructions

1. Draw 4 measurement cards.
2. Put them in order from smallest to largest.
3. Draw 1 comparison card.
4. Write your explanation.
5. Check your answers.
6. Swap roles and play the next round.





1. Roll the dice.

2. Move your counter.

3. Pick up a card.

4. Read the score or digital display.

5. Say the measurement and unit.

6. Say how you know.

7. Check your answer.

8. Take turns.

Start

Finish

Go forward 2 spaces

Go forward 1 space

Go back 1 space

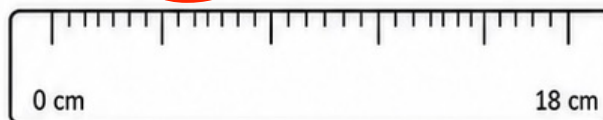
Name: _____

Date: _____

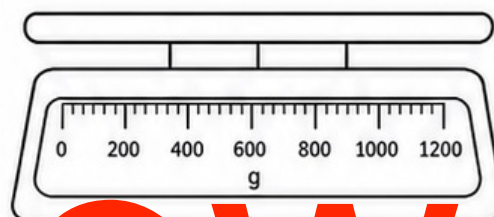
Measurement Assessment – Part 1: Reading Scales

How you working

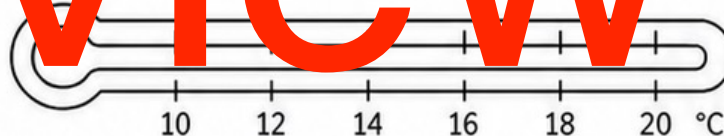
- 1** A ruler runs from 0 cm to 18 cm in 6 equal spaces.
A marker is at the 5th space after 0.
What length is shown?



- 2** A mass scale runs from 0 g to 1200 g in 6 equal spaces.
A marker is at the 4th space after 0.
What mass is shown?



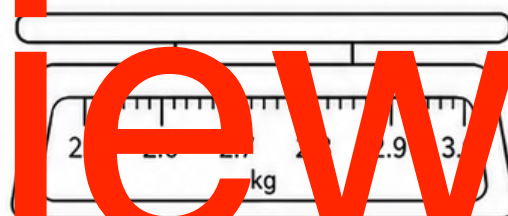
- 3** A thermometer reading is halfway
between 14°C and 18°C.
What temperature is shown?



- 4** A jug reading is one quarter of the way
from 1.2 L to 1.6 L.
What capacity is shown?



- 5** A mass reading is three quarters of the way
from 2.5 kg to 3.0 kg.
What mass is shown?



- 6** Record each display accurately and name the quantity it measures.

1.48 kg

21.6 °C

05:40

Name: _____

Date: _____

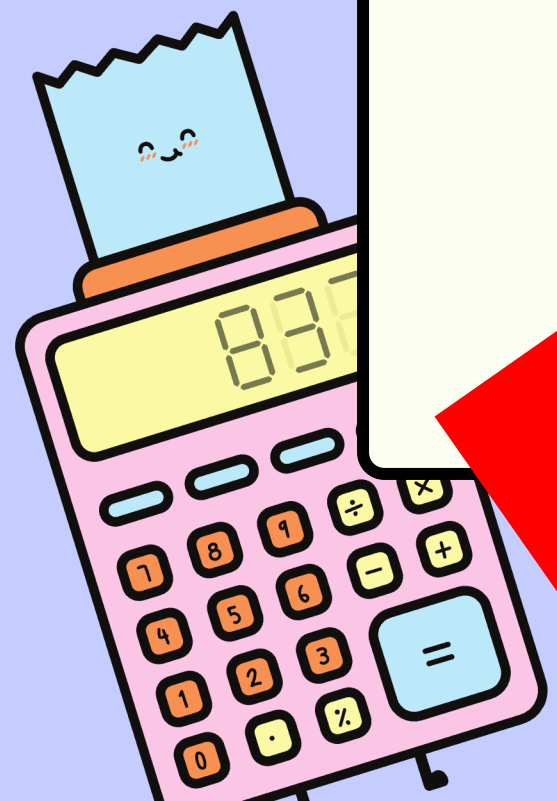
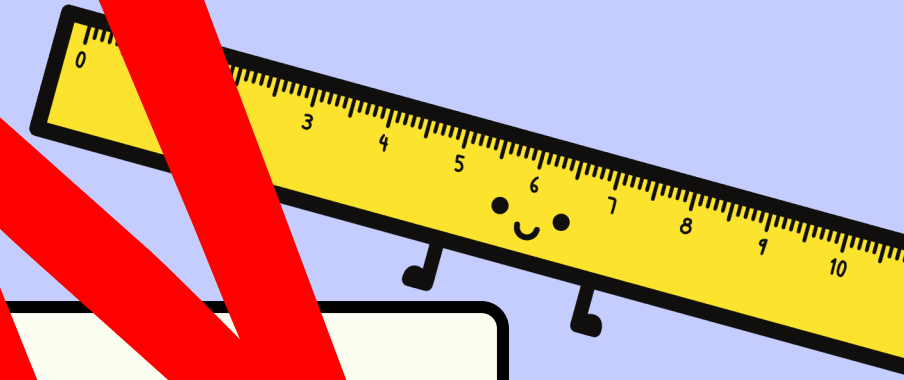
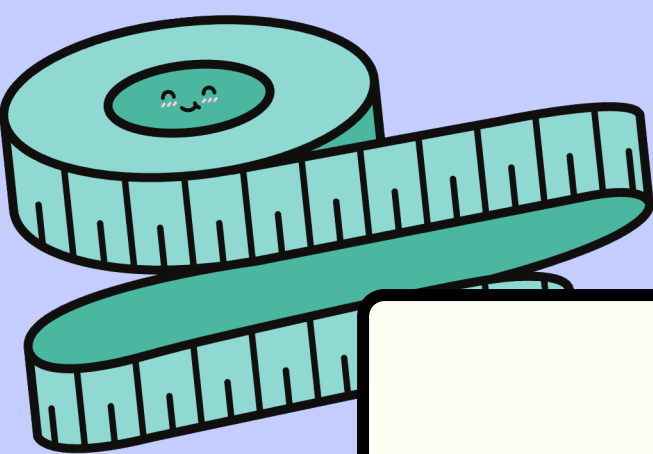
Year 4 Measurement Rubric

Unmarked scales, partial units, digital instruments and measurement reasoning

	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
 Interpreting Scales	Needs help to read numbers on a scale. or counts spaces incorrectly.	Can read some marked scales with support. Sometimes miscounts spaces or chooses the wrong number.	Reads marked and unmarked scales equally spaced and identifying the value of each mark.	Consistently interprets a range of scales accurately, including starting points other than zero and reversed scales.	Confidently interprets complex scales and works. Applies understanding in unfamiliar contexts.
 Estimating Partial Units	Struggles to estimate between markings. Does not round to the nearest whole mark only.	Estimates between markings with support. May be inconsistent or use uneven intervals.	Estimates and reads partial units (e.g. halves, quarters) between markings with reasonable accuracy.	Accurately estimates partial units to the appropriate level of precision for the scale being used.	Makes precise estimates between expected levels and justifies choices of precision using measurement knowledge.
 Using Units and Tools	Does not use appropriate units or tools. Needs frequent prompts about units and scale limits.	Uses familiar units and tools with support. Sometimes forgets units or reads tools incorrectly.	Selects appropriate units and tools. Uses digital and analogue instruments within their range and resolution.	Uses a range of suitable units and tools confidently. Reads instruments accurately and records measurements precisely.	Chooses the most appropriate units and tools for the situation and uses them efficiently.
 Comparing Measurements	Struggles to compare measurements. Does not use appropriate language for comparing.	Compares using informal language (e.g. bigger/smaller). May not use units.	Compares and orders measurements using correct units (e.g. >, <, =) and appropriate language.	Compares and orders measurements accurately. Explains comparisons using units and numbers.	Solves problems involving comparisons, including different units and ratio. Explains thinking clearly.
 Mathematical Reasoning and Communication	Does not explain reasoning. Answers are incomplete or unclear.	Explains with prompts. Uses some measurement vocabulary.	Explains reasoning using measurement vocabulary (e.g. scale, interval, unit, cm, ml, minutes). Conclusions are clear.	Explains reasoning clearly using correct vocabulary and units. Checks answers and reflects on results.	Communicates reasoning thoroughly using precise vocabulary. Justifies methods and suggests alternative strategies.

Teacher Feedback:





PREVIEW

Measurement Unmarked and Partial Units

Learning Intentions

By the end of this lesson, you will be able to:

- read scales when some numbers are missing
- find the value of one equal interval
- estimate readings between marked values
- choose sensible answers and check whether answers make sense



What Measurement Tells Us

Measurement describes an attribute using a number and a unit.

Length tells how long. Mass tells how heavy.

Capacity tells how much a container can hold.

Duration and temperature describe time and heat.



Reading Unmarked Scales

Some scales show only a start and an end value.

The unlabelled marks should divide the range into equal spaces.

Count spaces, not marks.

Example: 0 to 20 cm in 10 spaces means 2 cm per space.



A Reliable Four-Step Method

1. Identify the labelled values.
2. Count the equal spaces between the values.
3. Divide the difference by the number of spaces.
4. Count to the marker, then check the unit and reasonableness.



What Are Partial Units?

A reading may sit between two scale marks.

Halfway means one half of the interval.

One quarter means one of four equal parts.

Three quarters means three of four equal parts.



Estimating Between Marks

Find the value of the whole interval first.

Judge how far the mark sits through the gap.

Add that fraction of the interval to the lower mark.

State an estimate that matches the precision of the scale.



Length

Common units: millimetres, centimetres, metres and kilometres.

Choose a unit that suits the object.

Align the zero point before reading a ruler.

Example: 0 to 18 cm in 6 spaces gives 3 cm per space.



Mass

Common units: grams and kilograms.

Check that the scale starts at zero before measuring.

Convert to the same unit before comparing.

Remember: $1\text{ kg} = 1000\text{ g}$.



Capacity

Common units: millilitres and litres

Read a jug at eye level and use the marked intervals.

Convert before comparing different units.

Remember: $1 \text{ L} = 1000 \text{ mL}$.



Duration

Common units: seconds, minutes and hours.

A timer display such as 5:45 means 5 minutes 45 seconds.

Count equal time intervals carefully.

Remember: 1 minute = 60 seconds.



Temperature

Temperature is commonly measured in degrees Celsius.

Read the numbered marks and find the interval value.

Estimate carefully where the level sits between marks.

Always include the unit.



Scaled Instruments

Rulers, jugs, thermometers and analogue scales use marked intervals.

First find the value of one interval.

Then count or estimate to the marker.

Use the instrument's display unit in your answer.



Digital Instruments

Digital instruments display a direct reading.

Record every digit, decimal point and unit accurately.

Check the display is switched on and the instrument is correctly set.

A digital reading can still be unreasonable if the tool was misused.



Choosing the Right Unit

Use centimetres for a pencil and metres for a classroom.

Use grams for a book and kilograms for a suitcase.

Use millilitres for a bottle and litres for a large container.

Use seconds, minutes or hours to match the duration.



Comparing Equivalent Units

Convert measurements to the same unit before comparing.

$0.45 \text{ kg} = 450 \text{ g}$, so it is heavier than 420 g .

$1.2 \text{ L} = 1200 \text{ mL}$, so it holds more than 1150 mL .

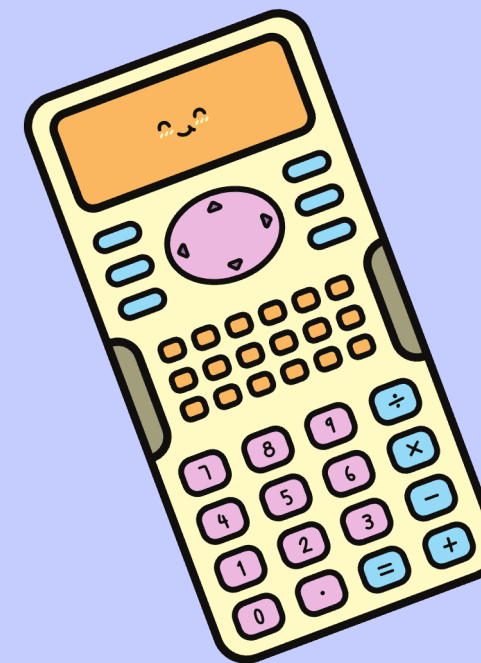
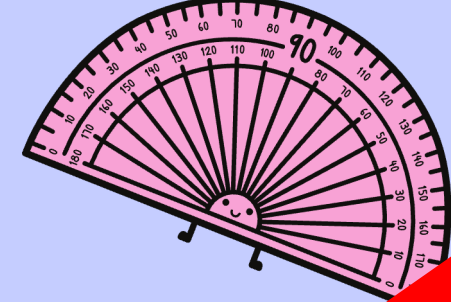
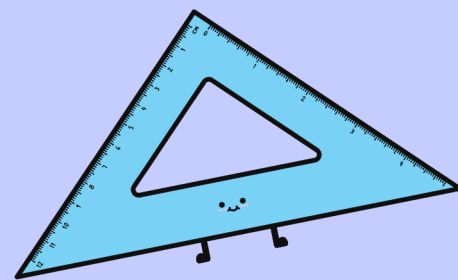
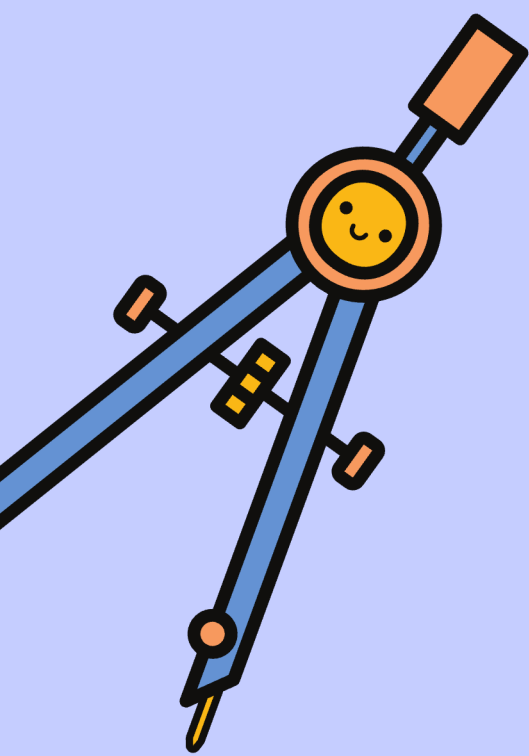
For duration, convert minutes and seconds to one unit.



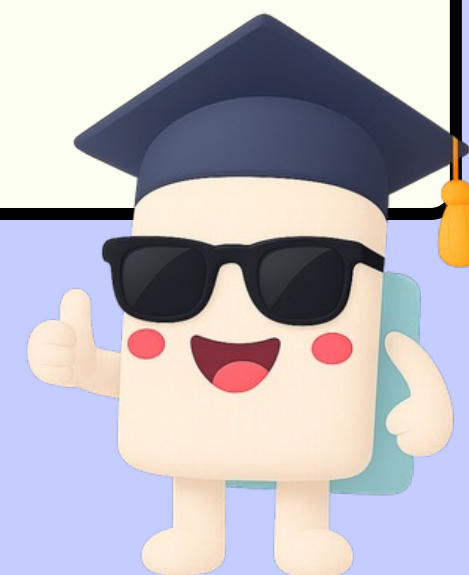
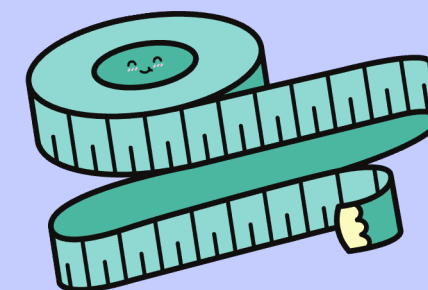
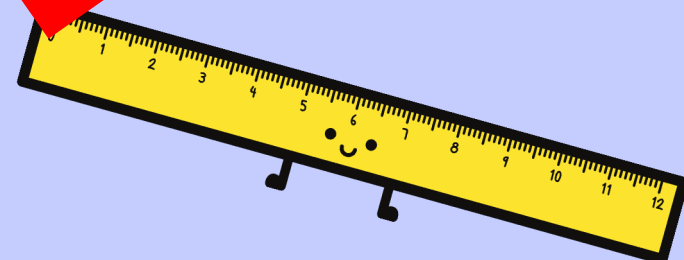
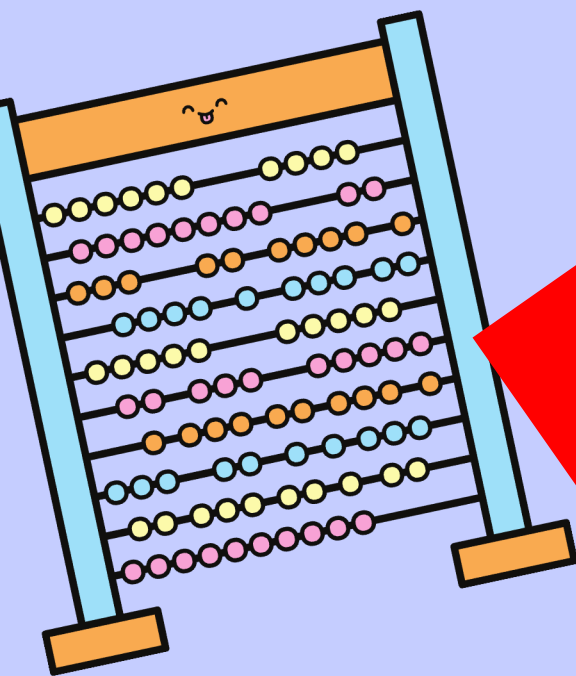
Common Mistakes – Final Check

- ✓ Count spaces, not marks.
- ✓ Subtract the labelled values before dividing.
- ✓ Include the correct unit and a decimal point.
- ✓ Convert before comparing.
- ✓ Ask: Is this answer sensible for the context?





Well Done!



Year 4 Measurement Quiz



Question 1 – Multiple Choice

A ruler runs from 0 cm to 16 cm in 10 equal spaces.
The marker is at the 4th space. What is the reading?

A. 4 cm B. 8 cm C. 10 cm D. 16 cm



Answer 1

B. 8 cm

$10 \div 2 = 2$ cm per space.

4×2 cm = 8 cm.



Question 2 – True or False

A reading halfway between 6 cm and 7 cm is 6.5 cm.

True or false?

Be ready to explain the size of the interval.



Answer 2

The interval is 1 cm. Half of 1 cm is 0.5 cm.

$$6 \text{ cm} + 0.5 \text{ cm} = 6.5 \text{ cm}.$$



Question 3 – Short Answer

A mass scale runs from 0 g to 500 g in 5 equal spaces.

What is the value of one interval?

Show the division you use.



Answer 3

100 g per interval

$$500 \div 5 = 100.$$

Each equal space represents 100 g.



Question 4 – Multiple Choice

A jug reading is three quarters of the way from 400 mL to 600 mL.

What is the reading?

A. 450 mL B. 500 mL C. 550 mL D. 575 mL



Answer 4

400 mL

The interval is 150 mL.

Three quarters of 200 mL is 150 mL.

$$400 + 150 \text{ mL} = 550 \text{ mL}.$$



Question 5 – True or False

A digital measuring instrument is always correct.
True or false?

Think about zeroing, drifts, stability and tool use.



Answer 5

use.
A digital display can be affected by incorrect zeroing, the wrong unit,
movement or misuse.
Check the setup to see whether the result is sensible.



Question 6 – Multiple Choice

A ruler runs from 0 cm to 15 cm in 5 equal spaces.
The marker is at the third space. What is the reading?

A. 3 cm B. 6 cm C. 9 cm D. 12 cm



Answer 6

C. 3 cm

$15 \div 5 = 3$ cm per space.

$$3 \times 3 = 9 \text{ cm.}$$



Question 7 – Multiple Choice

Which capacity is the largest?

A. 0.75 L B. 750 mL C. 700 mL D. 0.7 L

Convert all four to the same unit.



Answer 7

750 mL = 0.75 L

$0.75 \text{ L} = 750 \text{ mL}$

750 mL is greater than 720 mL and 700 mL.

0.7 L equals 700 mL.



Question 8 – Short Answer

How do you estimate a measurement that sits between two scale marks?

Describe the steps and explain how you choose a sensible level of precision.



Answer 8

Find the interval value, halve the width of the gap, and add that amount to the lower mark.

Then round the estimate that matches the scale's precision.



Question 9 – True or False

To find an interval value, you should count the marks instead of the spaces.
True or False? Explain.



Answer 9

Intervals are the spaces between marks.

For example, 6 marks create only 5 equal spaces.



Question 10 – Multiple Choice

A timer scale runs from 0 to 30 minutes in 6 equal spaces.

The marker is at the 5th space. What time is shown?

A. 5 min B. 20 min C. 25 min D. 30 min



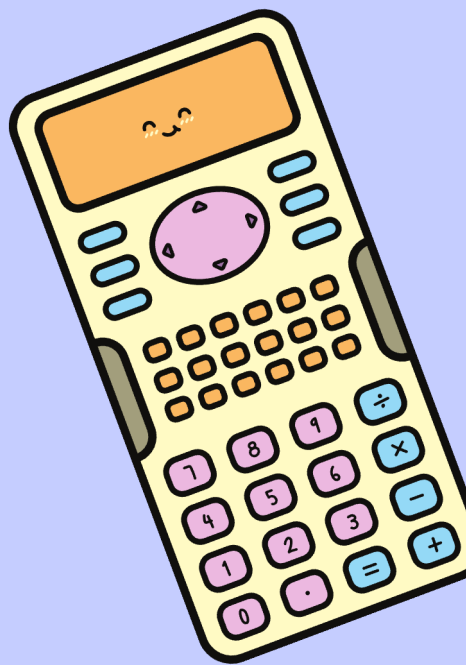
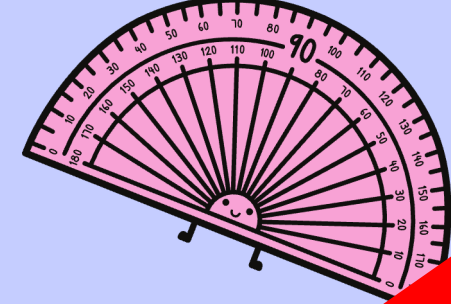
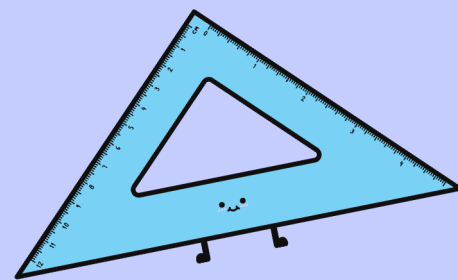
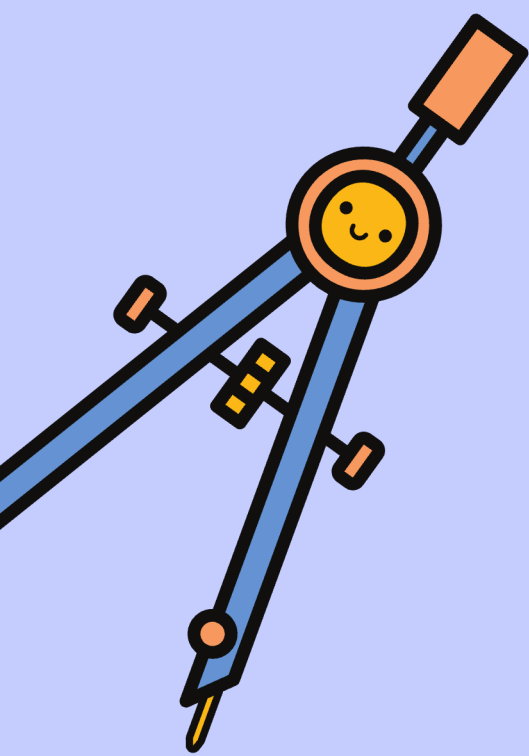
Answer 10

C. 25 minutes

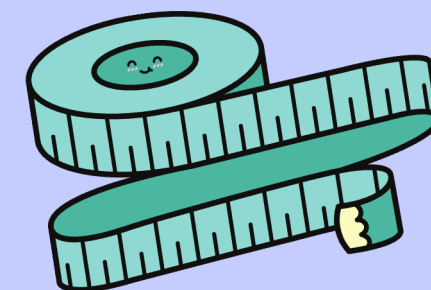
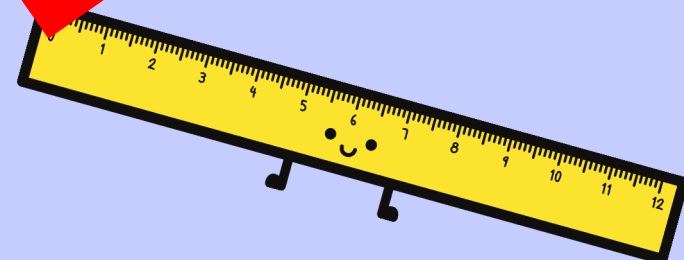
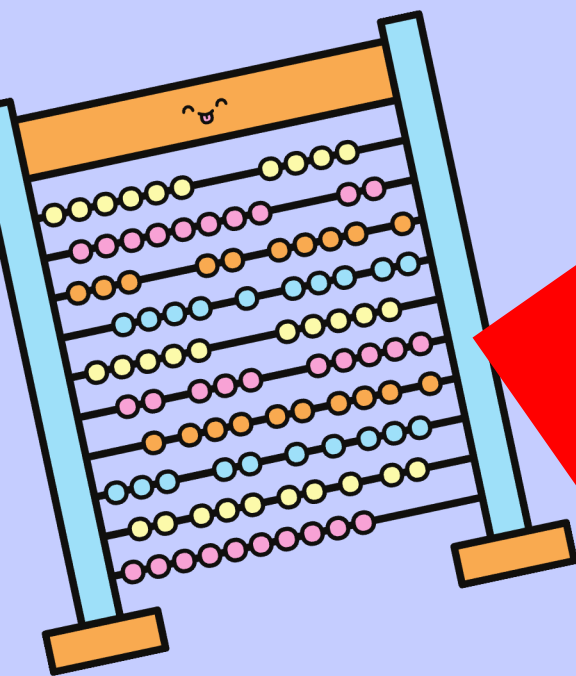
$5 \div 6 = 6$ minutes per space.

$5 \times 5 \text{ minutes} = 25 \text{ minutes.}$





Well Done!



PREVIEW