15. [Measuring]

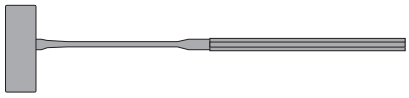
Skill 15.1 Comparing objects based on their length (1).

- Use a piece of string, paper or a ruler to check the length of each object if possible.
- Use your best estimate.
- Compare the given lengths.

Q. Which bat is the longest?

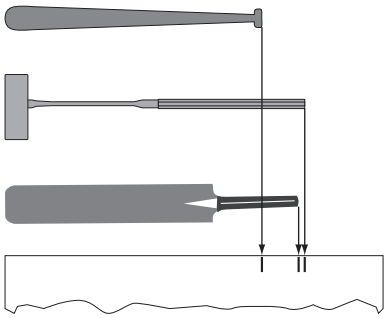
A)

B)



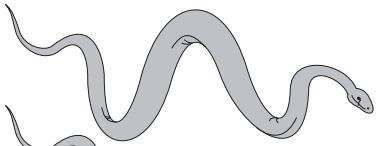
C)

A. ***B***

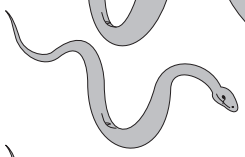


a) Which snake is the longest?

A)



B)



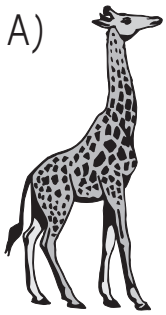
C)

A

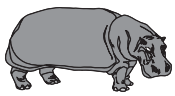
b) Circle the cat with the shortest tail.

c) Which animal is the tallest?

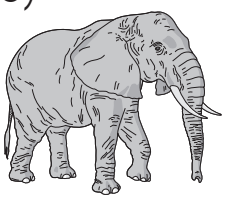
A)



B)

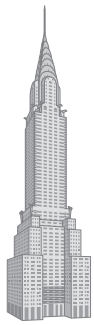


C)



d) Which landmark is the shortest?

A)



B)

C)

e) Which animal is the tallest?

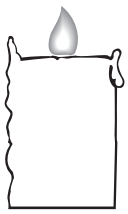
A)

B)

C)

f) Which candle is the widest?

A)



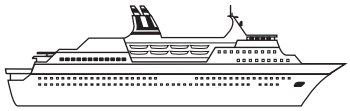
B)

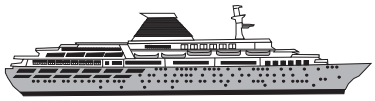
C)

Skill 15.1 Comparing objects based on their length (2).

g) Circle the rabbit with the longest ears.

h) Which ship is the longest?

A) 

B) 

C)  ☐

i) Which is likely to be the longest?

A) car
B) scooter
C) train ☐

j) Which is likely to be the shortest?

A) cup
B) toaster
C) kettle ☐

k) Which is likely to be the shortest?

A) sword
B) javelin
C) relay baton ☐

l) Which person is likely to be the tallest?

A) baby
B) woman
C) child ☐

m) Which is likely to be the widest?

A) window
B) doorway
C) driveway ☐

n) Which is likely to be the longest?

A) broom
B) axe
C) toilet brush ☐

o) Which is the shortest?

A) paper clip
4 centimetres
B) hair brush
20 centimetres ☐

p) Which rail trip is the longest?

A) The TranzAlpine
223 kilometres
B) The Coastal Pacific
348 kilometres ☐

q) Which river is the shortest?

A) Taieri River
288 kilometres
B) Waikato River
425 kilometres ☐

r) Which shrub is the shortest?

A) Common Heath
2 metres
B) Golden Wattle
4 metres ☐

Skill 15.2 Comparing objects based on their weight (1).

- Weigh the object if possible.
- Use your best estimate.
- Compare the given weights.

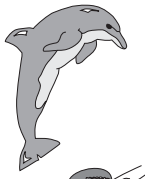
Q. Which animal is likely to weigh the least?

A)  B)  C) 

A. ***B***

a) Which animal is likely to weigh the most?

A) 

B) 

C) 

B

b) Which animal is likely to weigh the least?

A) 

B) 

C) 

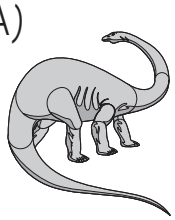
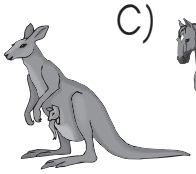
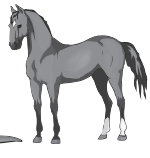
c) Which animal is likely to weigh the least?

A)  B)  C) 

d) Which animal is likely to weigh the most?

A)  B)  C) 

e) Which animal is likely to weigh the most?

A)  B)  C) 

f) Which object is likely to weigh the most?

A) sheet of A4 paper
B) sandal
C) cement brick

Skill 15.2 Comparing objects based on their weight (2).

g) Which object is likely to weigh the most?

A) banana
B) cherry
C) strawberry

h) Which object is likely to weigh the least?

A) ship
B) paper plane
C) bicycle

i) Which object is likely to weigh the most?

A) television
B) refrigerator
C) microwave oven

j) Which object is likely to weigh the least?

A) candy bar
B) bag of cement
C) bag of potatoes

k) Which object does **not** weigh about 1 kilogram?

A) a clothes iron
B) a teaspoon
C) a bicycle pump

l) Which object does **not** weigh about 1 kilogram?

A) a bunch of 5 bananas
B) a medium rockmelon
C) iPad

m) What is the total weight of a stack of 50 TV guides?

TV guide = 30 grams

g

n) What is the total weight of 3 pecan pies?

pecan pie = 900 grams

g

o) How much more does a tennis racquet weigh than a squash racqet?

A) squash racquet = 150 grams
B) tennis racquet = 280 grams

g

p) How much more does a can of fruit weigh than a can of soup?

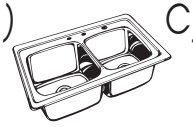
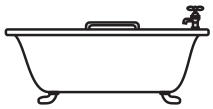
A) can of fruit = 825 grams
B) can of soup = 420 grams

g

Skill 15.3 Comparing objects based on their capacity (1).

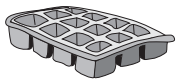
- Measure the volume if possible.
- Use your best estimate.
- Compare the given volumes.

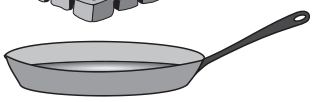
Q. Which container is likely to have the greatest capacity?

A)  B)  C) 

A. *C*

a) Which container is likely to have the greatest volume?

A) 

B) 

C) 

B

b) Which container is likely to have the least capacity?

A) 

B) 

C) 

c) Which ball has the greatest volume?

A) 
Volleyball

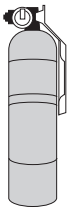
B) 
Handball

C) 
Tennis ball

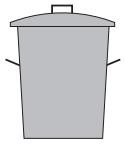
d) Which container is likely to hold the least volume?

A)  B)  C) 

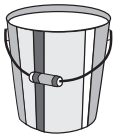
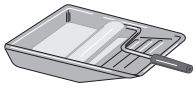
e) Which container is likely to hold the least volume?

A)  B)  C) 

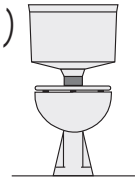
f) Which container is likely to have the greatest capacity?

A)  B)  C) 

g) Which container is likely to hold the greatest volume?

A)  B)  C) 

h) Which container is likely to have the least capacity?

A)  B)  C) 

Skill 15.3 Comparing objects based on their capacity (2).

i) Which object is likely to have the greatest capacity?

A) thimble
B) tea cup
C) match box

j) Which object is likely to have the least capacity?

A) petrol can
B) wine barrel
C) jam jar

k) Which object is likely to have the greatest capacity?

A) bird bath
B) swimming pool
C) kitchen sink

l) Which object is likely to hold the greatest volume?

A) baby's bottle
B) drink bottle
C) esky

m) Which object is likely to hold the least volume?

A) watering can
B) cement mixer
C) wheelbarrow

n) How many more litres does a wheelbarrow hold than a rubbish bin?

rubbish bin = 125 litres
wheelbarrow = 170 litres

L

o) How many times would you have filled the sprayer if you used 64 litres of spray?

back pack sprayer = 8 litres

p) How many more millilitres of liquid in the sauce bottle than the salad dressing bottle?

A) sauce bottle = 500 millilitres
B) salad dressing bottle = 330 millilitres

mL

q) What is the total volume of an egg?

egg yolk = 22 mL
egg white = 30 mL

mL

r) What is the total volume of a soda can and a drink bottle?

soda can = 375 millilitres
drink bottle = 330 millilitres

mL

Skill 15.4 Estimating length, weight and capacity by using the standard units of measurement.

Measuring an object

- Check with a measuring instrument the given unit of length, weight or capacity.
- Compare the object with the unit.

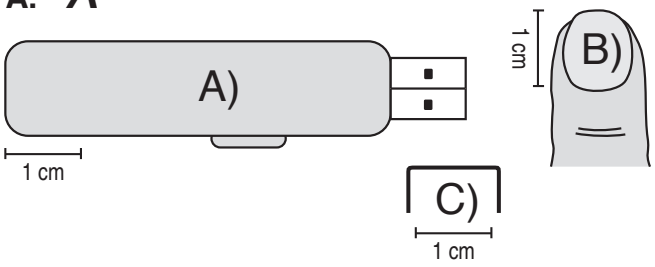
Comparing objects

- Check with a measuring instrument the given unit of length, weight or capacity.
- Measure the given objects, if possible.

Q. Which object is **not** about 1 centimetre long?

A) USB drive
B) finger nail
C) staple

A. ***A***



a) A mug holds:

A) less than a litre
B) about a litre
C) more than a litre

A

b) The length of a calculator is:

A) less than a metre
B) about a metre
C) more than a metre

c) An orange weighs:

A) less than a kilogram
B) about a kilogram
C) more than a kilogram

d) The length of a lamp post is:

A) less than a metre
B) about a metre
C) more than a metre

e) Which item weighs about 1 kilogram?

A) BBQ
B) clothes iron
C) spoon

f) Which item would hold about 1 litre?

A) washing machine
B) thimble
C) carton of milk

g) Which object is about 1 centimetre long?

A) biro
B) envelope
C) drawing pin

h) Which object is **not** about 1 metre high?

A) guitar
B) ukulele
C) cello

i) Which item would hold about 1 litre?

A) thermos
B) pen refill
C) milk vat

j) Which object is about 1 metre high?

A) stilts
B) pogo stick
C) roller blades

Skill 15.5 Selecting the appropriate units of measurement.

Choosing the type of unit
- Consider which units measure length, weight or capacity.

Choosing the size of unit
- Consider the amount of each unit and what is reasonable.

Q. Which unit measures the length of a pencil?

A) millimetre (mm)
B) metre (m)

A. ***A***

A millimetre looks like this: -
A metre is over 3 times the length of this page.
This is a possible pencil length.

So the length of a pencil is measured in millimetres not metres.

a) Which unit measures the volume of juice in a jug?

A) metre (m)
B) litre (L)
C) gram (g)

B

b) Which unit measures the length of a piece of wood?

A) litre (L)
B) kilogram (kg)
C) millimetre (mm)

c) Which unit measures the volume of water in a puddle?

A) kilometre (km)
B) kilogram (kg)
C) litre (L)

d) Which unit measures the weight of a new born chick?

A) kilogram (kg)
B) gram (g)

e) Which unit measures the length of a paper clip?

A) centimetre (cm)
B) metre (m)

f) Which unit measures the weight of a bag of cement?

A) kilogram (kg)
B) gram (g)

g) Which unit measures the width of a mobile phone?

A) kilometre (km)
B) centimetre (cm)

h) Which unit measures the volume of medicine in an eye dropper?

A) millilitre (mL)
B) litre (L)

i) Which unit is most commonly used to measure the length of a highway?

A) centimetre (cm)
B) kilometre (km)
C) metre (m)

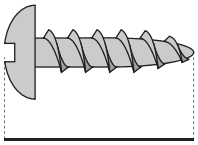
j) Which unit is most commonly used to measure the capacity of a swimming pool?

A) litre (L)
B) millilitre (mL)

Skill 15.6 Measuring length by using a ruler.

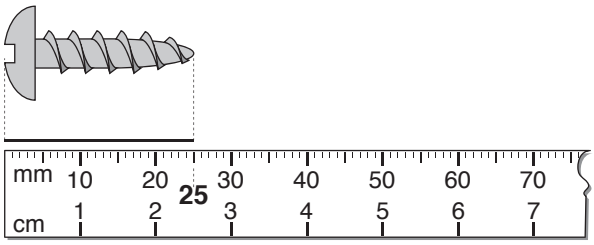
- Align the left edge of the ruler (zero) to the left edge of the object.
- Measure using the unit needed.
- Read in centimetres or use the fact 10 mm = 1 cm, to read in millimetres.

Q. Use a ruler to measure the length of the screw.

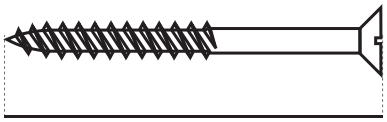


mm

A. ***25 mm***



a) Use a ruler to measure the length of the screw.

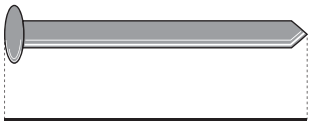


5 cm

b) Use a ruler to measure the length of the nail.

cm

c) Use a ruler to measure the length of the nail.



cm

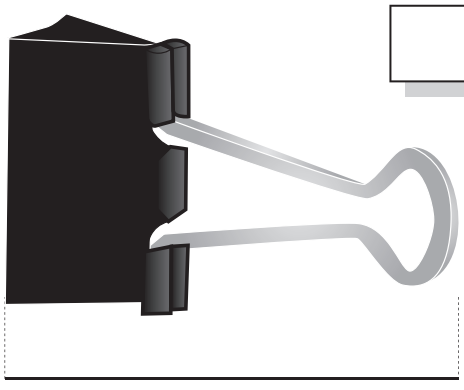
d) Use a ruler to measure the length of the needle.

cm

e) Use a ruler to measure the length of the bullet.

cm

f) Use a ruler to measure the length of the clip.

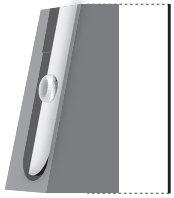


cm

g) Use a ruler to measure the length of the match.

mm

h) Use a ruler to measure the height of the sharpener.

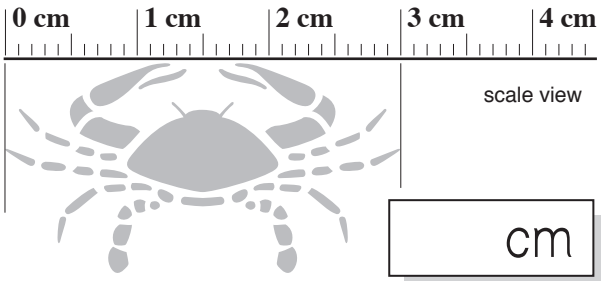


mm

Skill 15.7 Reading scales for length, weight and capacity (1).

- Read the number that matches the length, weight or capacity on the scale.

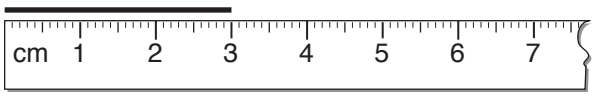
Q. Use the scale. How wide is the crab?



cm

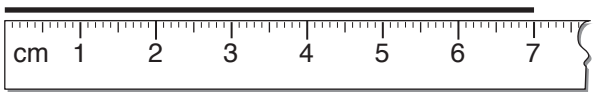
A. ***3 cm***

a) Use this ruler to measure the length of the line.



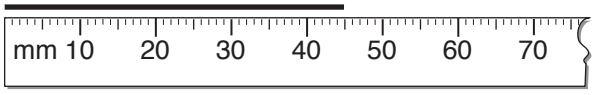
3 cm

b) Use this ruler to measure the length of the line.



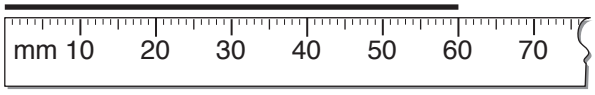
cm

c) Use this ruler to measure the length of the line.



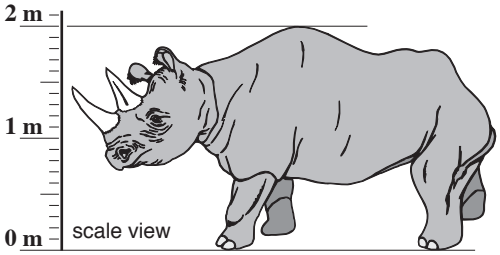
mm

d) Use this ruler to measure the length of the line.



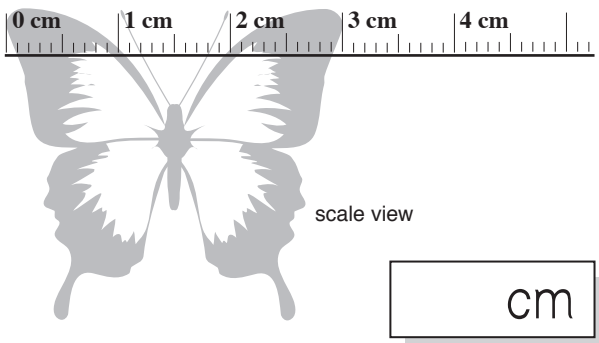
mm

e) Use the scale. How tall is the rhinoceros?



m

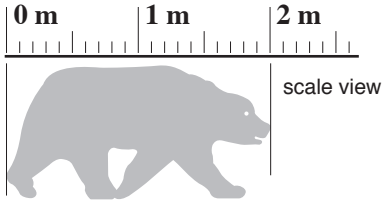
f) Use the scale. How wide is the butterfly?



cm

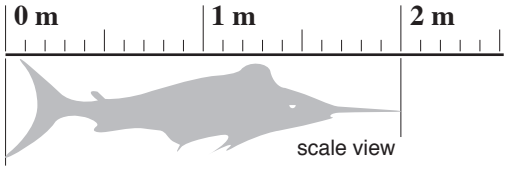
Skill 15.7 Reading scales for length, weight and capacity (2).

g) Use the scale. How long is the bear?



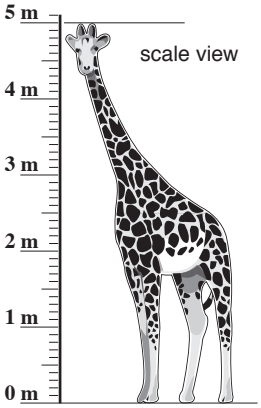
m

h) Use the scale. How long is the shark?



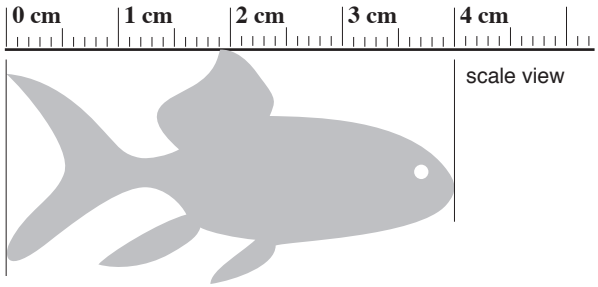
m

i) Use the scale. How tall is the giraffe?



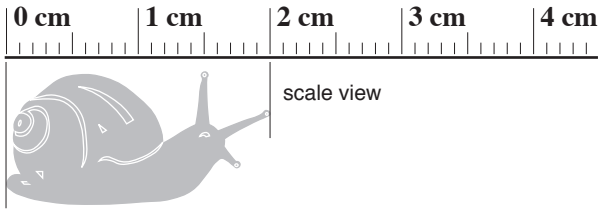
m

j) Use the scale. How long is the fish?



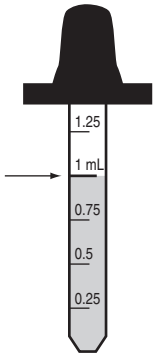
cm

k) Use the scale. How long is the snail?



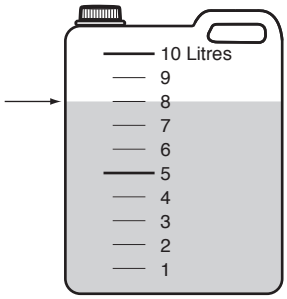
cm

l) What is the volume of the medicine?



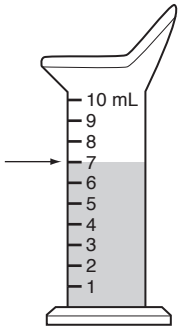
mL

m) What is the volume of the petrol?



L

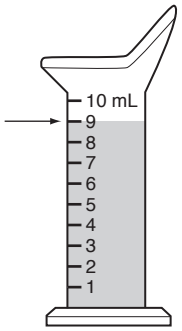
n) What is the volume of the medicine?



mL

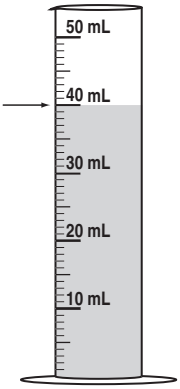
Skill 15.7 Reading scales for length, weight and capacity (3).

o) What is the volume of the medicine?



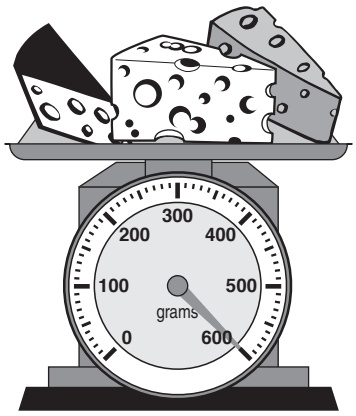
mL

p) What is the volume of the water?



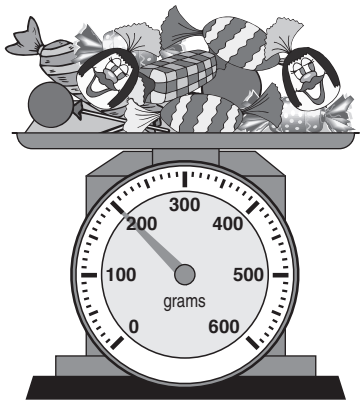
mL

q) What is the weight of the cheese?



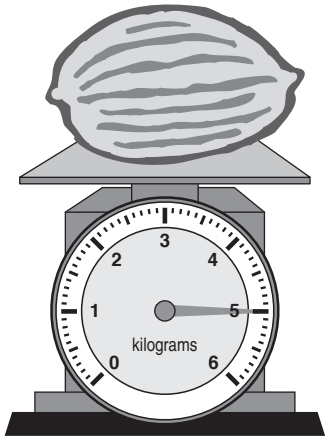
g

r) What is the weight of the lollies?



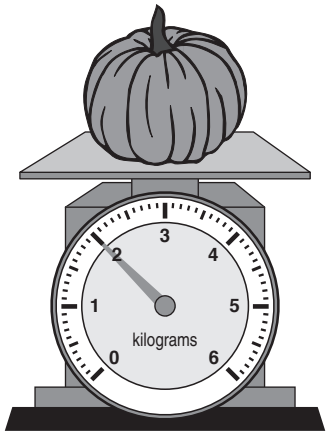
g

s) What is the weight of the watermelon?



kg

t) What is the weight of the pumpkin?

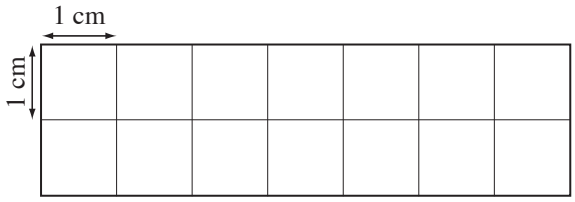


kg

Skill 15.8 Finding the perimeter of a shape by counting the units around the shape on a grid (1).

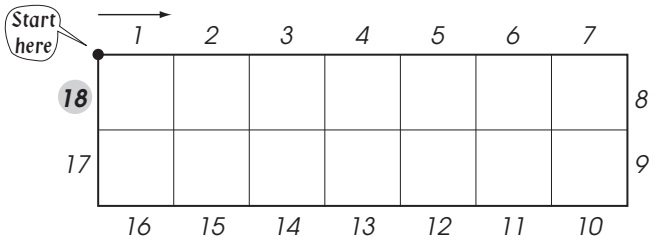
- Mark a starting point and count the number of grid units around the outside of the shape.
  Hint: The perimeter is the distance around the outside of a shape.

Q. What is the distance around this rectangle (perimeter)?



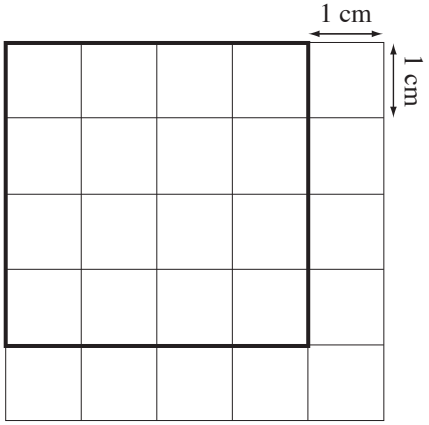
cm

A. ***18 cm***



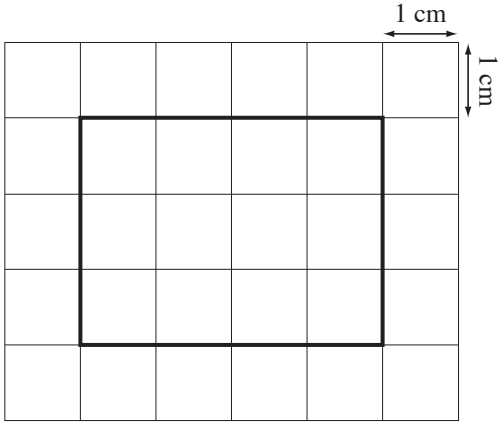
Each grid unit measures 1 cm.
Mark a starting point.
Count the number of grid units around the outside of the shape.
The perimeter is 18 centimetres.

a) What is the distance around this square (perimeter)?



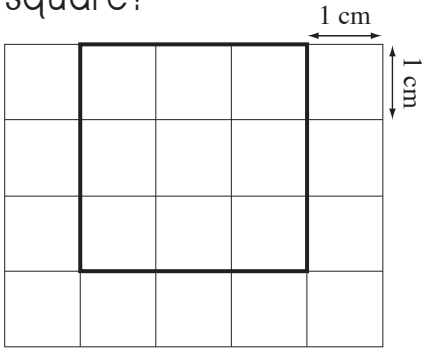
cm

b) What is the distance around this rectangle (perimeter)?



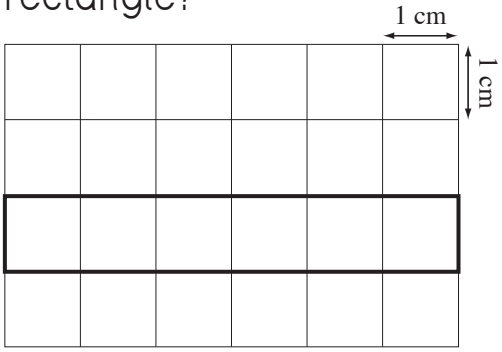
cm

c) What is the perimeter of this square?



cm

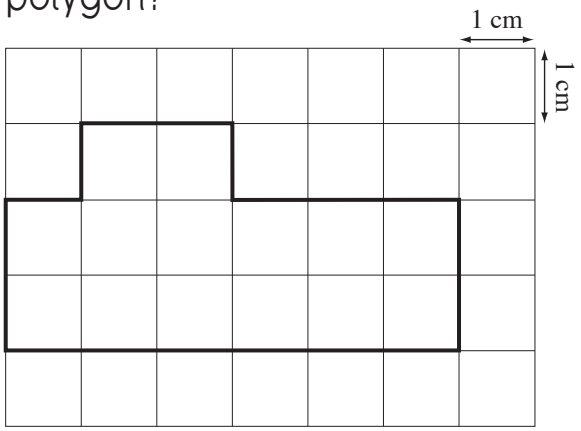
d) What is the perimeter of this rectangle?



cm

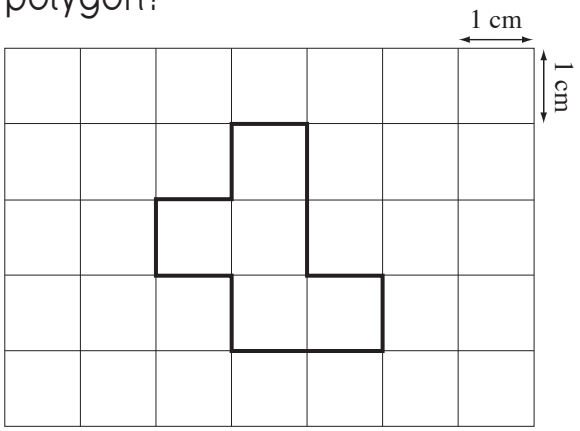
Skill 15.8 Finding the perimeter of a shape by counting the units around the shape on a grid (2).

e) What is the perimeter of this polygon?



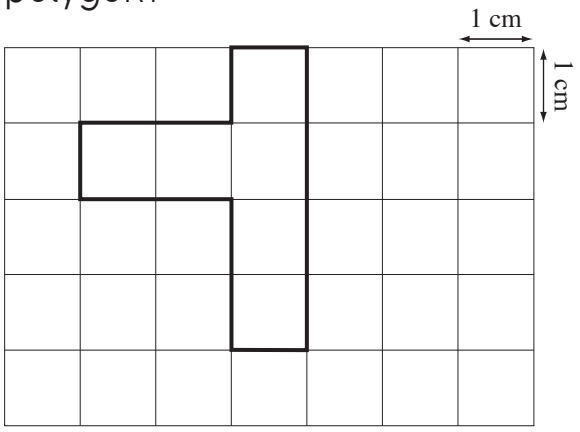
cm

f) What is the perimeter of this polygon?



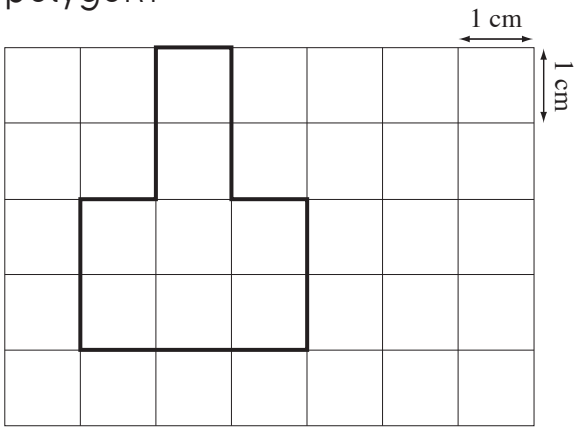
cm

g) What is the perimeter of this polygon?



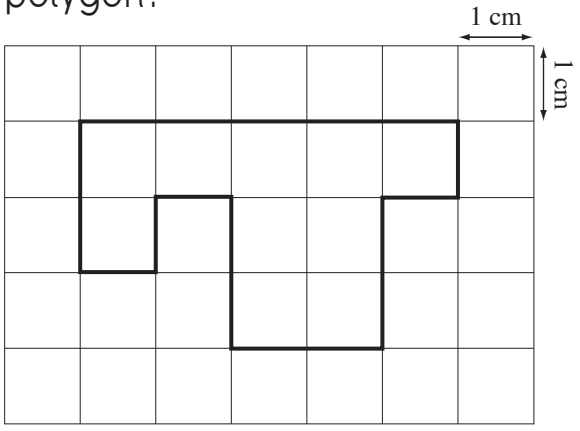
cm

h) What is the perimeter of this polygon?



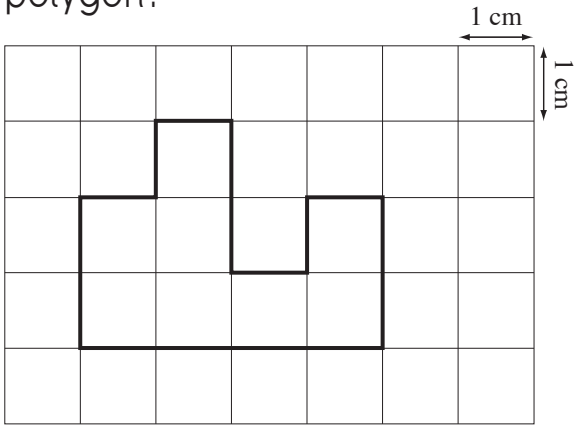
cm

i) What is the perimeter of this polygon?



cm

j) What is the perimeter of this polygon?

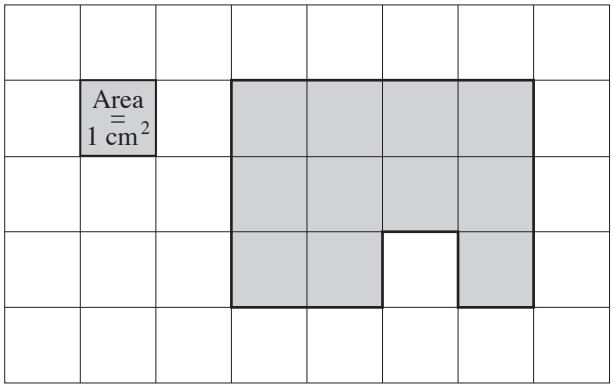


cm

Skill 15.9 Finding the area of a shape by counting the unit squares covered by the shape on a grid (1).

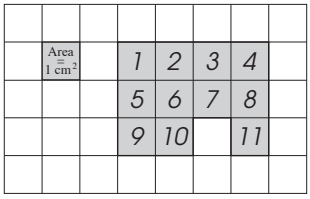
- Count the number of squares of a certain size that are needed to cover the shape.
  Hint: The area is the size a surface takes up.

Q. Find the area of the shaded shape.



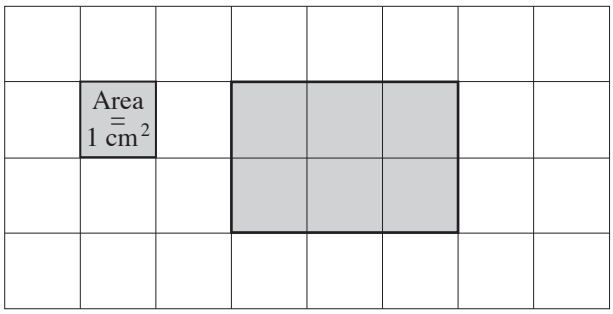
cm²

A. ***11 cm²***



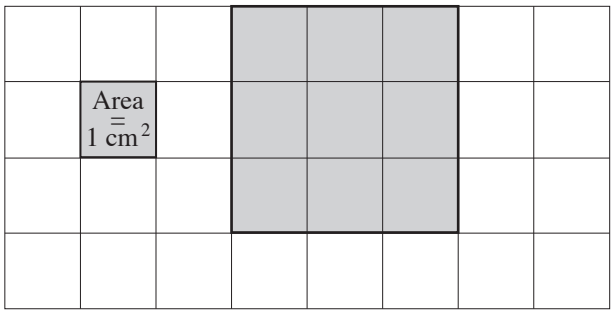
Each square is 1 cm on each side.
Count the squares that cover the surface inside the shape.
There are 11 squares, each with an area of 1 cm²
Area = 11 × 1 cm²
= 11 cm²

a) Find the area of the shaded rectangle.



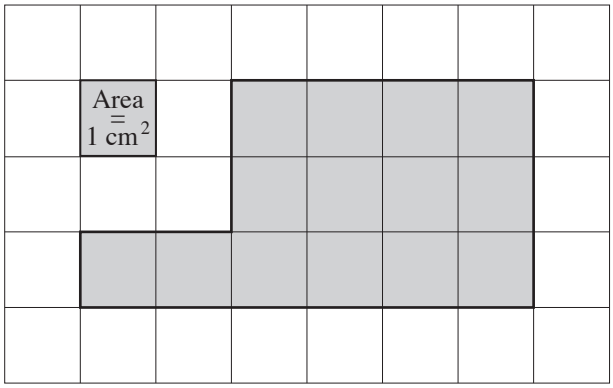
6 cm²

b) Find the area of the shaded square.



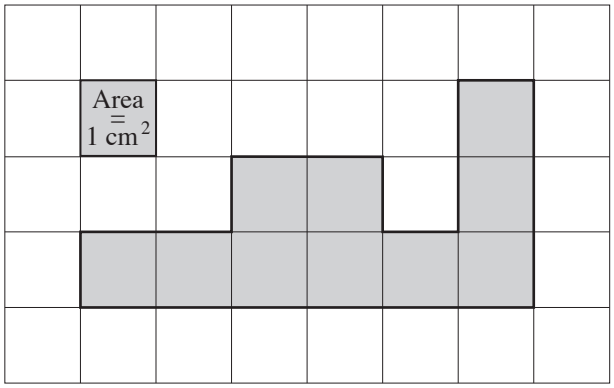
cm²

c) Find the area of the shaded shape.



cm²

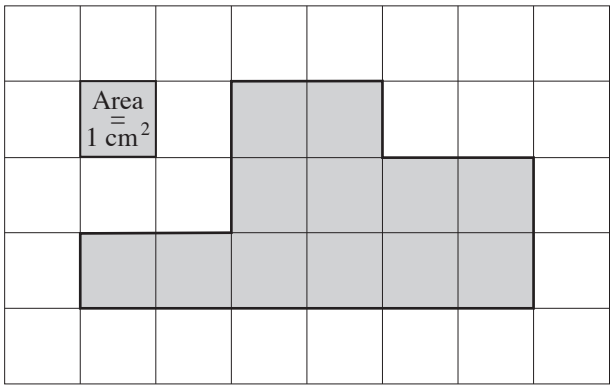
d) Find the area of the shaded shape.



cm²

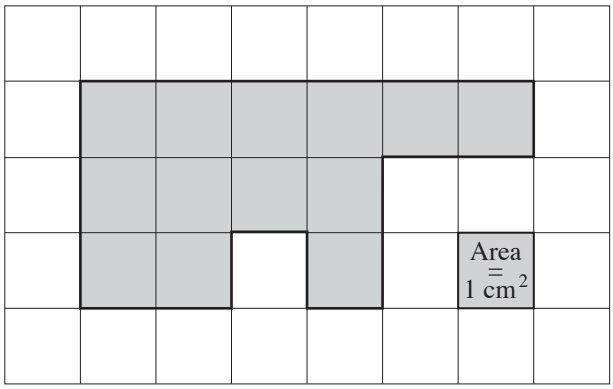
Skill 15.9 Finding the area of a shape by counting the unit squares covered by the shape on a grid (2).

e) Find the area of the shaded shape.



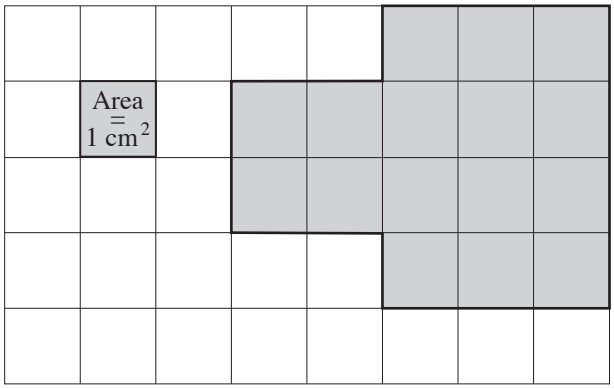
cm²

f) Find the area of the shaded shape.



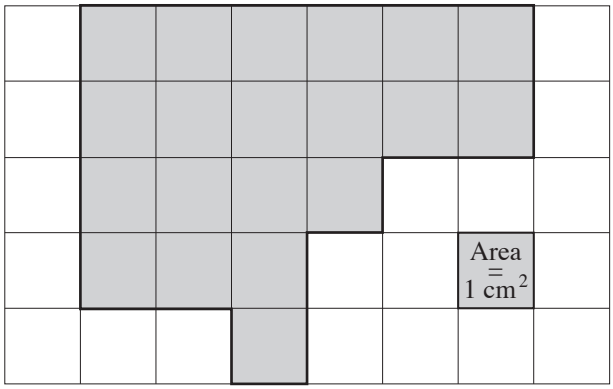
cm²

g) Find the area of the shaded shape.



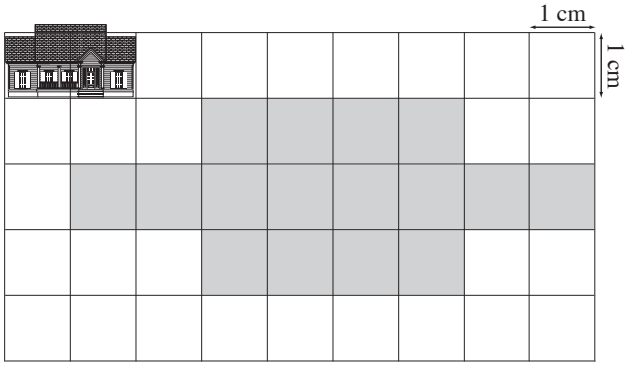
cm²

h) Find the area of the shaded shape.



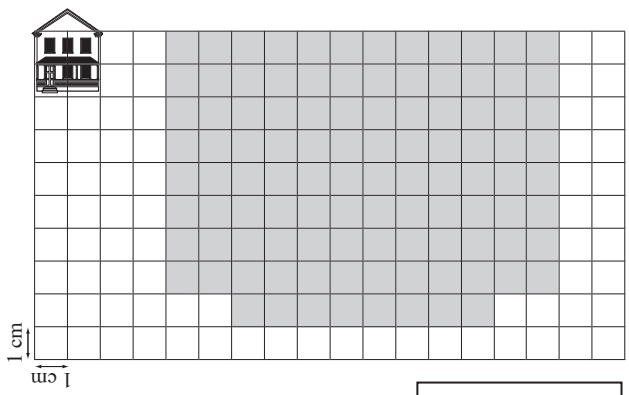
cm²

i) The area of the doll's house sketch is shaded. Find the area.



cm²

j) The area of the cubby house sketch is shaded. Find the area.

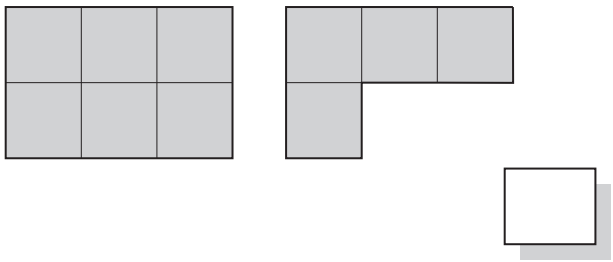


cm²

Skill 15.9 Finding the area of a shape by counting the unit squares covered by the shape on a grid (3).

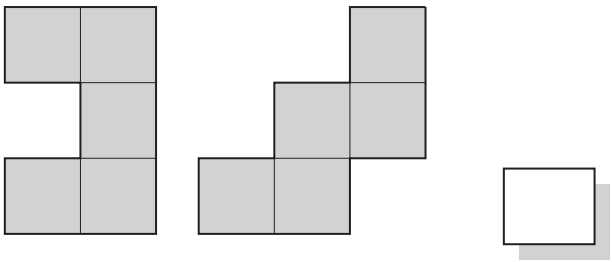
k) The shapes below have the same:

A) perimeter
B) area
C) perimeter and area



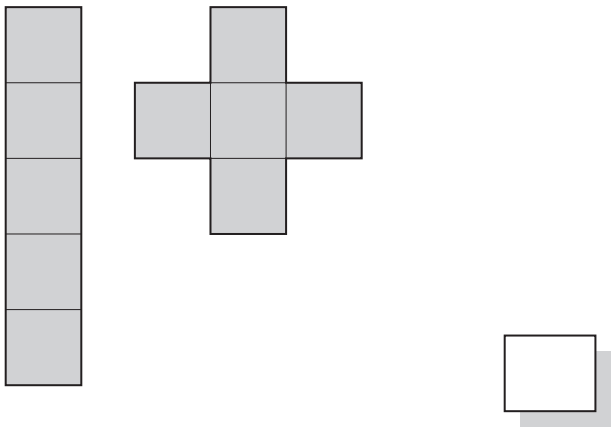
l) The shapes below have the same:

A) perimeter
B) area
C) perimeter and area



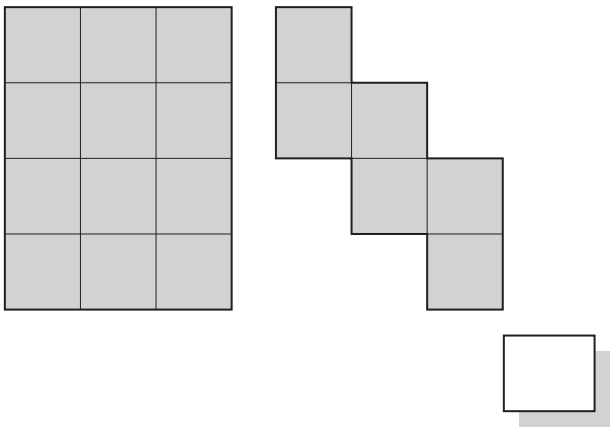
m) The shapes below have the same:

A) perimeter
B) area
C) perimeter and area



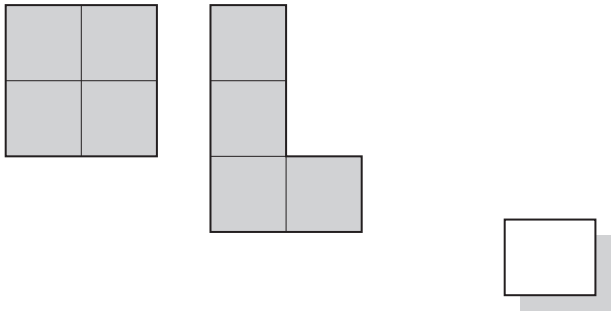
n) The shapes below have the same:

A) perimeter
B) area
C) perimeter and area



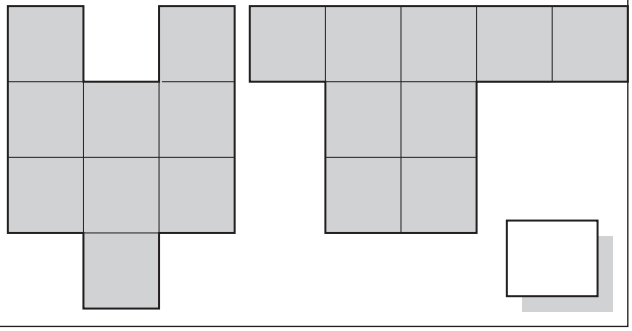
o) The shapes below have the same:

A) perimeter
B) area
C) perimeter and area



p) The shapes below have the same:

A) perimeter
B) area
C) perimeter and area



Skill 15.10 Converting units of length.

To change from **smaller** units to **larger** units
- Divide by the conversion factor (because you need less).

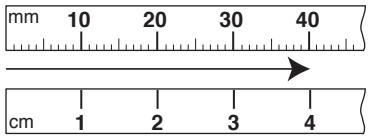
Example: To change 40 millimetres to centimetres ÷ **by 10**

To change from **larger** units to **smaller** units
- Multiply by the conversion factor (because you need more).

Example: To change 4 centimetres to millimetres × **by 10**

Conversion Facts - LENGTH

1 km = 1000 m = 100 000 cm = 1 000 000 mm
1 m = 100 cm = 1000 mm
1 cm = 10 mm



Q. A queen size matress is 150 centimetres wide. How many metres is this? [1 m = 100 cm]

A) 15 B) 1.5
C) 1500 D) 0.15

A. *150 cm ÷ 100 = 1.5 m*
B

To convert 150 cm to m, divide by 100.

a) At 3 months old the average boy is 60 cm long. How many millimetres is this? [1 cm = 10 mm]

A) 0.6 B) 6
C) 600 D) 6000

60 cm × 10 = 600 mm

b) The Carrington Falls (NSW) is 50 metres high. How many centimetres is this? [1 m = 100 cm]

A) 500 B) 5000
C) 5 D) 0.5

c) The width of an A4 sheet of paper is 210 millimetres. How many centimetres is this? [1 cm = 10 mm]

A) 2.1 B) 2100
C) 210 D) 21

d) The AFL ground has a minimum width of 110 metres. How many centimetres is this? [1 m = 100 cm]

A) 11 B) 1.1
C) 11 000 D) 1100

e) The length of an average paper clip is 30 millimetres. How many centimetres is this? [1 cm = 10 mm]

A) 0.3 B) 3
C) 300 D) 3000

f) A standard table tennis table is 275 centimetres long. How many millimetres is this? [1 cm = 10 mm]

A) 2.75 B) 27.5
C) 2750 D) 27 500

Skill 15.11 Converting units of mass (weight).

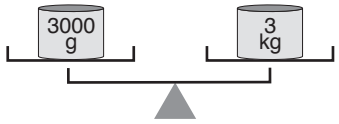
To change from **smaller** units to **larger** units
- Divide by the conversion factor (because you need less).

Example: To change 3000 grams to kilograms ÷ **by 1000**

To change from **larger** units to **smaller** units
- Multiply by the conversion factor (because you need more).

Example: To change 3 kilograms to grams × **by 1000**

Conversion Facts - MASS
1 tonne = 1000 kg = 1 000 000 g
1 kg = 1000 g



Q. A baby elephant weighs about 90 kilograms at birth. How many grams is this? [1 kg = 1000 grams]

A) 900 B) 9000
C) 90 000 D) 900 000

A. *90 kg × 1000 = 90 000 g*
C

To convert 90 kg to g, multiply by 1000.

a) A typical cricket bat weighs 1400 grams. How many kilograms is this? [1 kg = 1000 grams]

A) 0.14 B) 1.4
C) 14 D) 140

1400 g ÷ 1000 = 1.4 kg

b) A gold nugget was discovered in Australia in 1869 weighing nearly 73 kilograms. How many grams is this? [1 kg = 1000 grams]

A) 7.3 B) 730
C) 7300 D) 73 000

c) The weight of a laptop is 2 kg. How many grams is this? [1 kg = 1000 g]

A) 2000 B) 200
C) 20 D) 0.2

d) The weight of an empty suitcase is 2700 grams. How many kilograms is this? [1 kg = 1000 g]

A) 27 B) 2.7
C) 270 D) 27 000

e) How many kilograms in 3000 grams?

A) 300 B) 30
C) 3 D) 0.3

f) How many grams in 9 kilograms?

A) 9000 B) 900
C) 90 D) 0.9

Skill 15.12 Converting units of capacity (liquid volume).

To change from **smaller** units to **larger** units
- Divide by the conversion factor (because you need less).

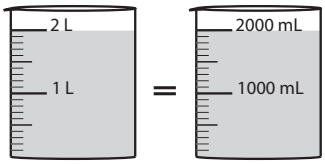
Example: To change 2000 millilitres to litres ÷ **by 1000**

To change from **larger** units to **smaller** units
- Multiply by the conversion factor (because you need more).

Example: To change 2 litres to millilitres × **by 1000**

Conversion Facts - CAPACITY

1 L (litre) = 1000 mL (millilitre)



Q. The average adult lung holds about 6 litres of air. How many millilitres is this? [1 L = 1000 mL]

A) 0.6 B) 60
C) 600 D) 6000

A. *6 litres × 1000 = 6000 mL*
D

To convert 6 litres to millilitres, multiply by 1000.

a) The fish tank holds 10 000 mL of water. How many 1 litre jugs of water are needed to fill the tank? [1000 mL = 1 litre]

A) 1000 B) 100
C) 10 D) 1

10 000 mL ÷ 1000 = 10 L

b) To fill a standard bathtub you need 150 litres of water. How many millilitres is this? [1 L = 1000 mL]

A) 15 000 B) 150 000
C) 1500 D) 15

c) A human bladder has a capacity of about 500 mL. How many litres is this? [1000 mL = 1 litre]

A) 0.5 B) 5
C) 50 D) 5000

d) An average kitchen sink holds 20 litres of water. How many millilitres is this? [1 L = 1000 mL]

A) 200 B) 20 000
C) 2000 D) 2

e) How many litres in 7000 millilitres?

A) 700 B) 70
C) 7 D) 0.7

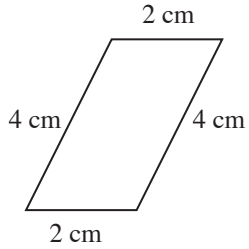
f) How many millilitres in 3 litres?

A) 3000 B) 300
C) 30 D) 0.3

Skill 15.13 Finding the perimeter of a shape by adding the lengths of all sides.

- Add the lengths of each side.
  Hint: The perimeter is the distance around the outside of a shape.

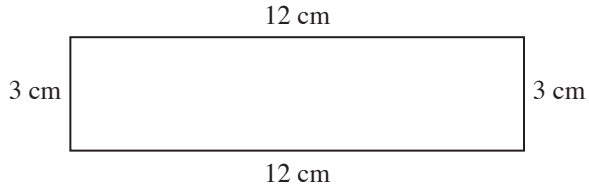
Q. Find the perimeter of the parallelogram.



cm

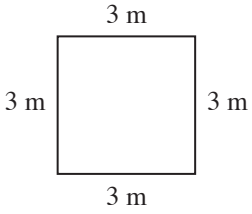
A. $2 + 4 + 2 + 4$
$= \mathbf{12\ cm}$

a) Find the perimeter of the rectangle.



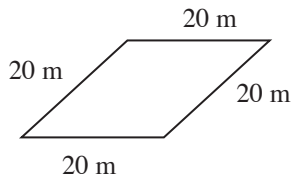
$12 + 3 + 12 + 3 =$ cm

b) Find the perimeter of the square.



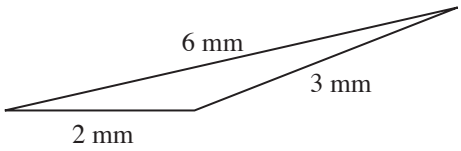
= m

c) Find the perimeter of the rhombus.



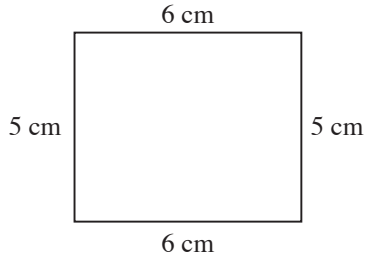
= m

d) Find the perimeter of the triangle.



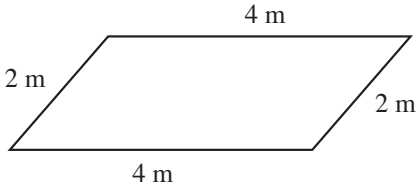
= mm

e) Find the perimeter of the rectangle.



= cm

f) Find the perimeter of the parallelogram.



= m

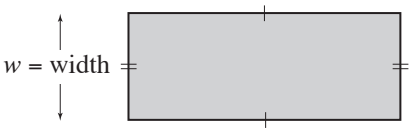
Skill 15.14 Finding the area of a rectangle by multiplying the side lengths.

- Count the number of squares of a certain size that are needed to cover the shape.

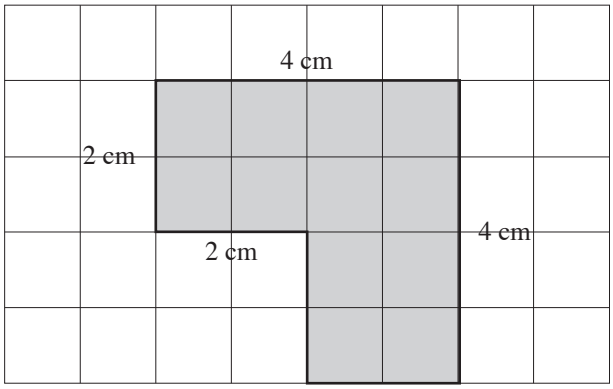
OR

- Divide the shape into rectangles.
- Multiply length by width of each rectangle: Area = $l \times w$
- Use the results from each rectangle to find the total area.

Area = length × width



Q. Find the area of the shaded shape.

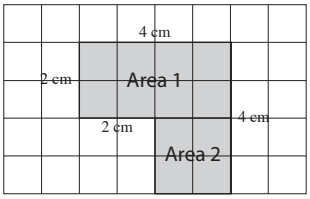


A.

Area 1 $= l \times w$
$= 4 \times 2$
$= 8\ cm^2$

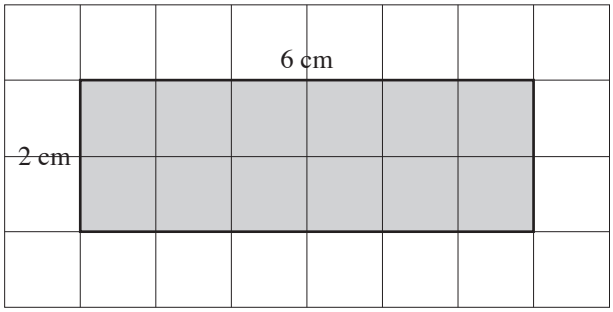
Area 2 $= l \times w$
$= 2 \times 2$
$= 4\ cm^2$

Area (total) $= 8 + 4$
$= \mathbf{12\ cm^2}$



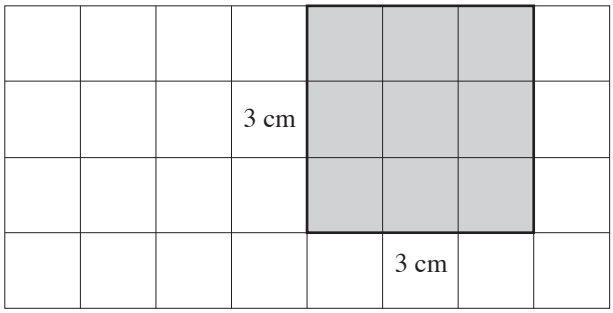
Add the areas of the 2 rectangles.

a) Find the area of the shaded shape.



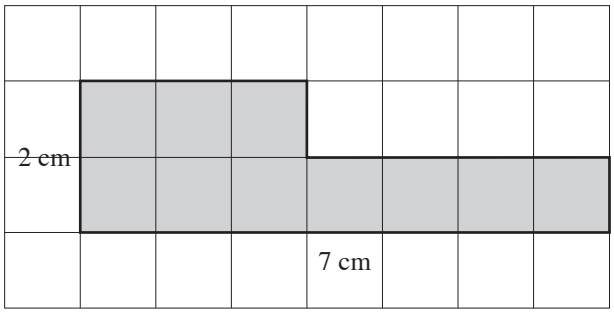
2 × 6 = ____ cm²

b) Find the area of the shaded shape.



= ____ cm²

c) Find the area of the shaded shape.

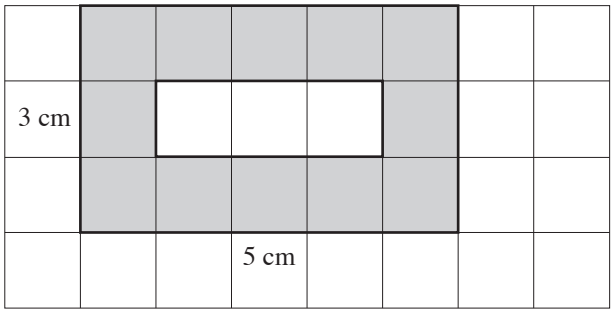


Area 1 = ____

Area 2 = ____

Area (total) = ____ cm²

d) Find the area of the shaded shape.



Area 1 = ____

Area 2 = ____

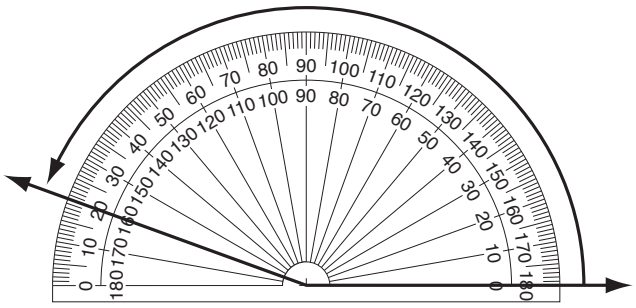
Area (total) = ____ cm²

Skill 15.15 Measuring an angle using a protractor.

- Place the center of the protractor at the corner (vertex) of the angle.
- Align one line of the angle with a zero line on the protractor.
- Read the measurement where the other line of the angle crosses the scale on the protractor.

Hint: Protractors can be read using either the inside or outside scale depending on which zero is used.

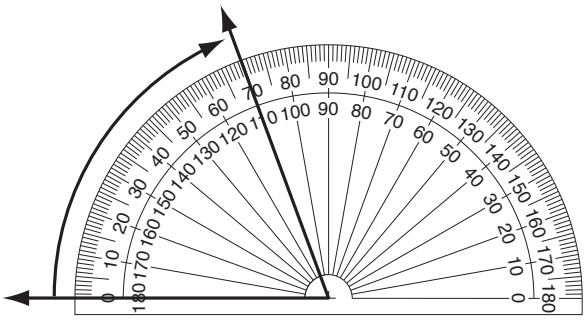
Q. Use the protractor to measure the size of this angle.



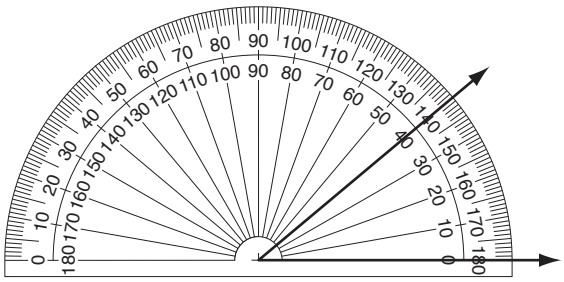
A. ***160°***

Read using the inside scale.
One line of the angle is at 0°.
The other line of the angle extends around to 160°.

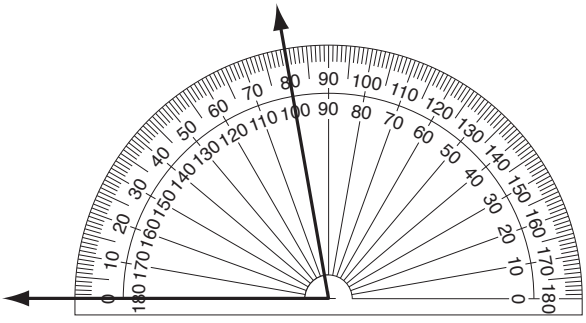
a) Use the protractor to measure the size of this angle.



b) Use the protractor to measure the size of this angle.



c) Use the protractor to measure the size of this angle.



d) Use the protractor to measure the size of this angle.