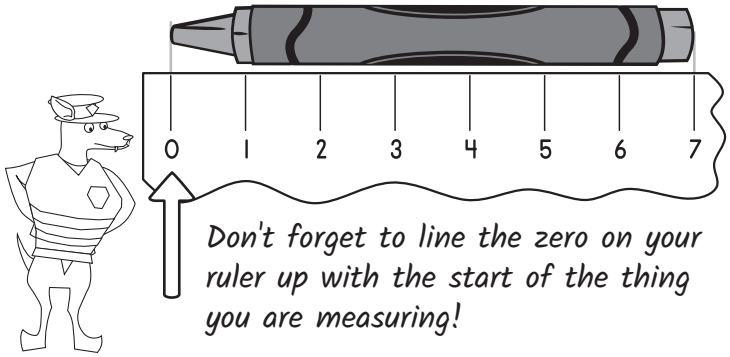
Lesson 61

Reviewing Centimetres

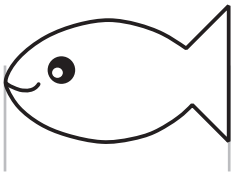
Show what you know!

Let's start by reviewing how to use a ruler to measure things in centimetres.

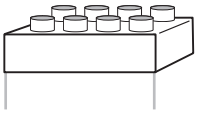


Lesson Practice

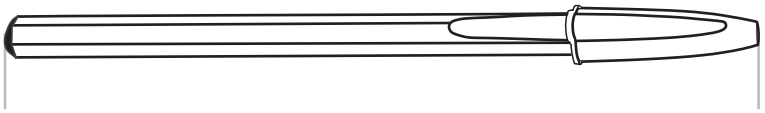
Use your ruler to measure the objects below:



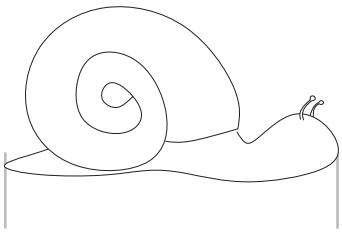
_____ cm



_____ cm



_____ cm

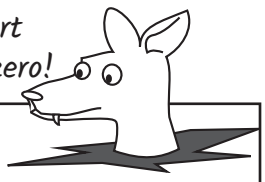


_____ cm

_____ cm

Let's make it real!

Time to be measurement detectives! Use your ruler to find and measure five different objects around your house. Draw a picture or write the name of each object in the 'Object' column. Then, carefully measure its length in centimetres and write the measurement in the 'Size in cm' column.



Object	Size in cm

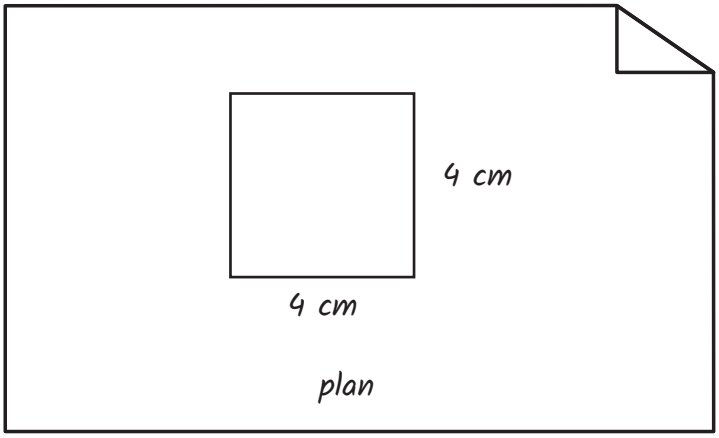
Lesson 62

Drawing with Centimetres

Today we're going to practice drawing with our rulers. This is a real-world grown-up skill used by architects, engineers and craftspeople of all types!

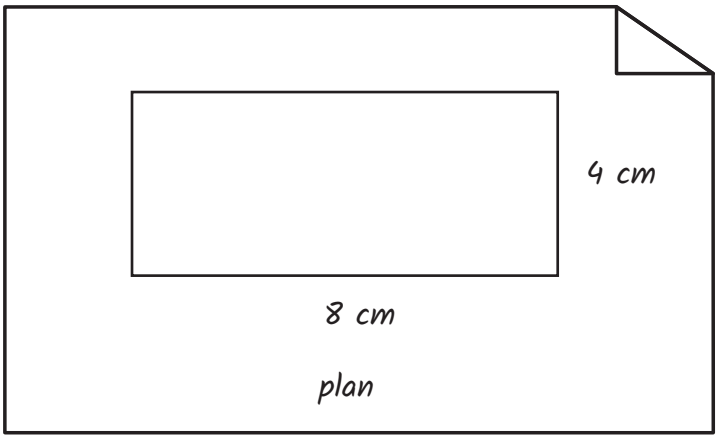
Example

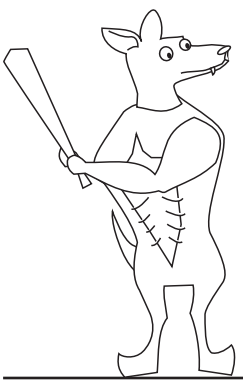
Draw the shape shown on the plan using your ruler and the dot grid below. Make sure your shape's measurements match the labels in the drawing!



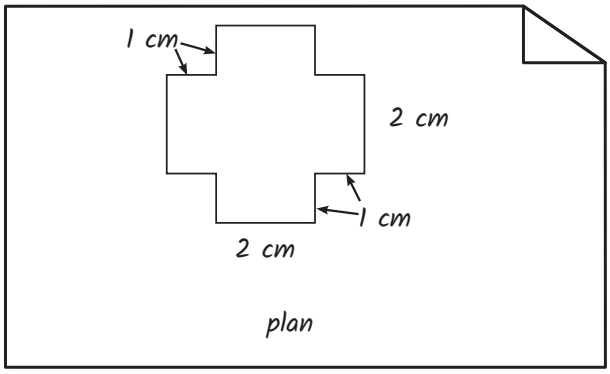
Lesson Practice

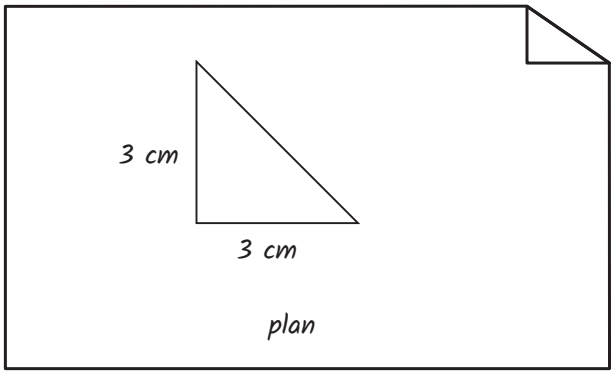
Draw the shape shown on the plan using your ruler and the dot grid below. Make sure your shape's measurements match the labels in the drawing!





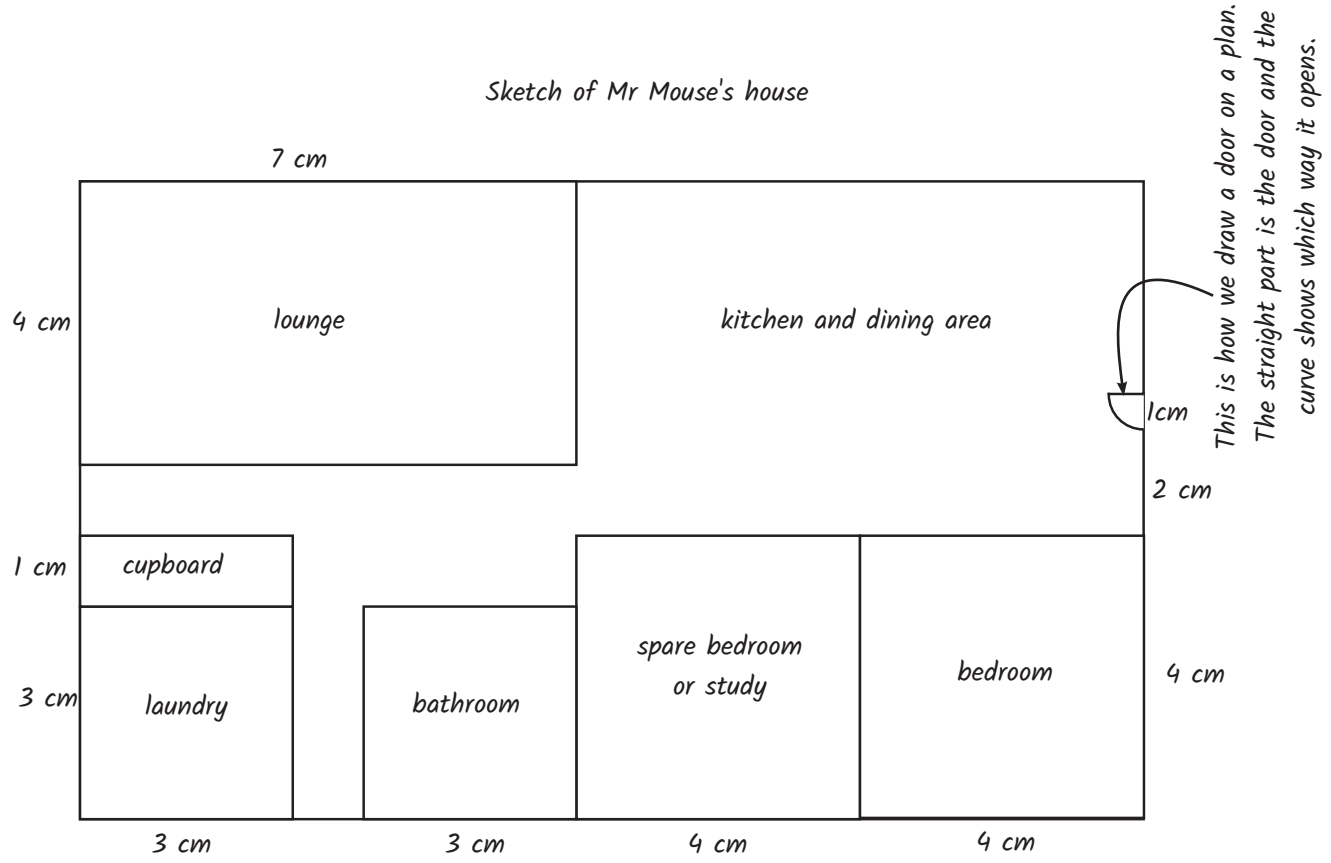
Draw the shape shown on the plan using your ruler and the dot grid below. Make sure your shape's measurements match the labels in the drawing!





Optional: make it real activity!

Mr Mouse wants to build a new house and his idea for the layout is below. Draw a plan according to his sketch. You'll need to add doors and windows to the rooms and you can add the furniture as well if you want!



Lesson 63

Estimating Centimetres

Today we're going to practice estimating length. This is a very useful skill that adults use every day! An estimate is like a bit like a guess.

Lesson Practice

Estimate (guess) the length of the lines below and write your guess in the "guess" box next to each line. Then, measure the lines with a ruler and write the measurement in the "real" box. Let's see how close your guesses can get!

Guess **Real**

_____

Guess **Real**

_____

Guess **Real**

_____

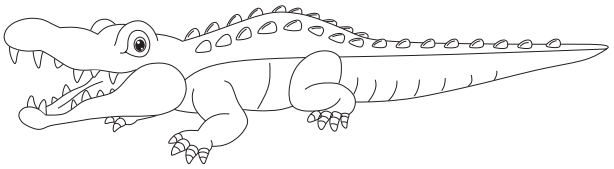
Guess **Real**

_____

Guess **Real**

_____

Now try something a bit trickier than a straight line:



Guess **Real**

Why not make this activity real? Go around the house and look for objects that you could measure with your ruler. Guess their length first and then see how close your guess is by measuring the object with your ruler.

Lesson 64

Estimating Metres

Last year we learned that one hundred centimetres make one metre. We also learned that one metre is about as long as a really big step and you measured your step size. You've probably grown by now, so let's measure your step again to see how close it is to 1m now!

Measuring your step size

1. Lay your tape measure out on the floor so that it is flat and the cm scale is facing up (if there are two scales).
2. Stand so that your heels are lined up with zero on the tape. You might need to ask someone to check that your heels are in the right place.
3. Take ONE really big step and stop still. Have someone tell you what number is closest to your heel.
4. Write the number below:

My step is _____ cm long.

How did you go? You should find that if you round your step size to the nearest hundred, it is about 100cm. Now, remember that 100cm is the same as one metre so your step is about 1 m long! Let's use your step size to estimate the size of some things that are too big to measure with your ruler. We call this 'pacing out' and adults use it all the time to estimate the size of big things!

We'll start with the room that you are in. Stand with your heels against one wall and count how many big steps it takes to get to the other side of the room. If there's too much furniture in the room to do this, measure the hallway or some other room in the house. If you find that there's a little step left when you get to the other side of the room, try to decide if it's more or less than half a step. If it's more than half a step, count it as another step. If it's less than half a step, don't count it. If you're not sure, just count it!

The room is _____ steps long.

So, the room is about _____ m long.

This number should be the same as the number of steps.

Now get ready to put this skill to work! Turn the page to find out how...

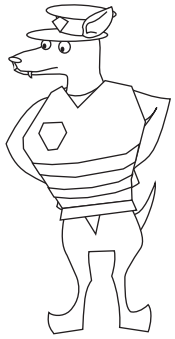
Now you're all set to get measuring some big things around the house.

Go around the house (inside and out) and find some things you can measure using "pacing out". Here are some ideas: your bed, your Mum's bed, a car, a skipping rope that is laid out flat on the ground and the garden hose (rolled out flat).

The table below will help you record your work. I've given you plenty of space so you can measure lots of things. You don't have to fill the whole table but you should aim to measure at least five things.

Don't worry about the last two columns for now, we'll use them in the next couple of lessons when we learn how to measure things exactly. For now, we're just estimating with our paces.

Please make sure you stay safe. Do not try to measure anything that you can't step around easily and safely. Also, ask an adult for permission before you pull anything out (like the garden hose) and be sure to put anything that you do pull out back exactly how you found it!



Object Draw or Write	**Estimated Length** in paces	**Measured Length** to the nearest metre	**Measured Length** in metres and centimetres

Object Draw or Write	**Estimated Length** in paces	**Measured Length** to the nearest metre	**Measured Length** in metres and centimetres

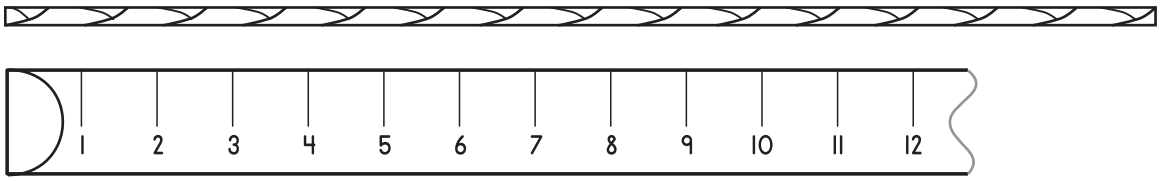
Lesson 65

Measuring Metres

Time to get out your dressmaker's tape measure and put it to use! The first thing we're going to learn is how to use it to measure things to the nearest metre. First get out the thing you found at the end of last lesson. I'm going to assume it's a piece of string.

1. Lay out your tape measure on the floor.
2. Match up the end of your string with the zero of the tape measure (see the picture below).
3. Roll out the string until you reach 100cm.
4. Cut off the string close to the 100cm mark so that you have a piece of string that is 100cm (or 1 metre!) long.

We will use this piece of string for the activity in this lesson.



Now let's use this piece of string to measure some things! Revisit all the objects you measured last lesson and measure them with your string. Here's how:

1. Line up the end of your string with one end of the object.
2. Carefully lay out the string so that it runs along the side that you are measuring.
3. Now put your finger on the other end of the string (at the one metre mark) - ask your teacher what this means if you don't get it.
4. With your finger holding the end at one metre down, flip the rest of the string over your hand and lay it out flat. You might need a friend to help you do this.
5. Keep flipping your string over until you reach the end of your object.
6. Make sure you count how many times you flip your piece of string and write the number down in the "Measured Length to the nearest metre" column on pages 92 and 93).
7. If the last time you flip your string it's longer than the object, decide if there's more or less than half of the string past the end of the object. If it's more than half, write down the number of flips you did **plus one**. If it's less than half, just write down the number of flips you did. If you're not sure, just write down the number of flips you did. (This is probably going to happen at least some of the time.)

To help you remember what a metre looks like, why not hang your piece of string up in your bedroom with the sign: 'One metre' above it when you've finished this lesson!

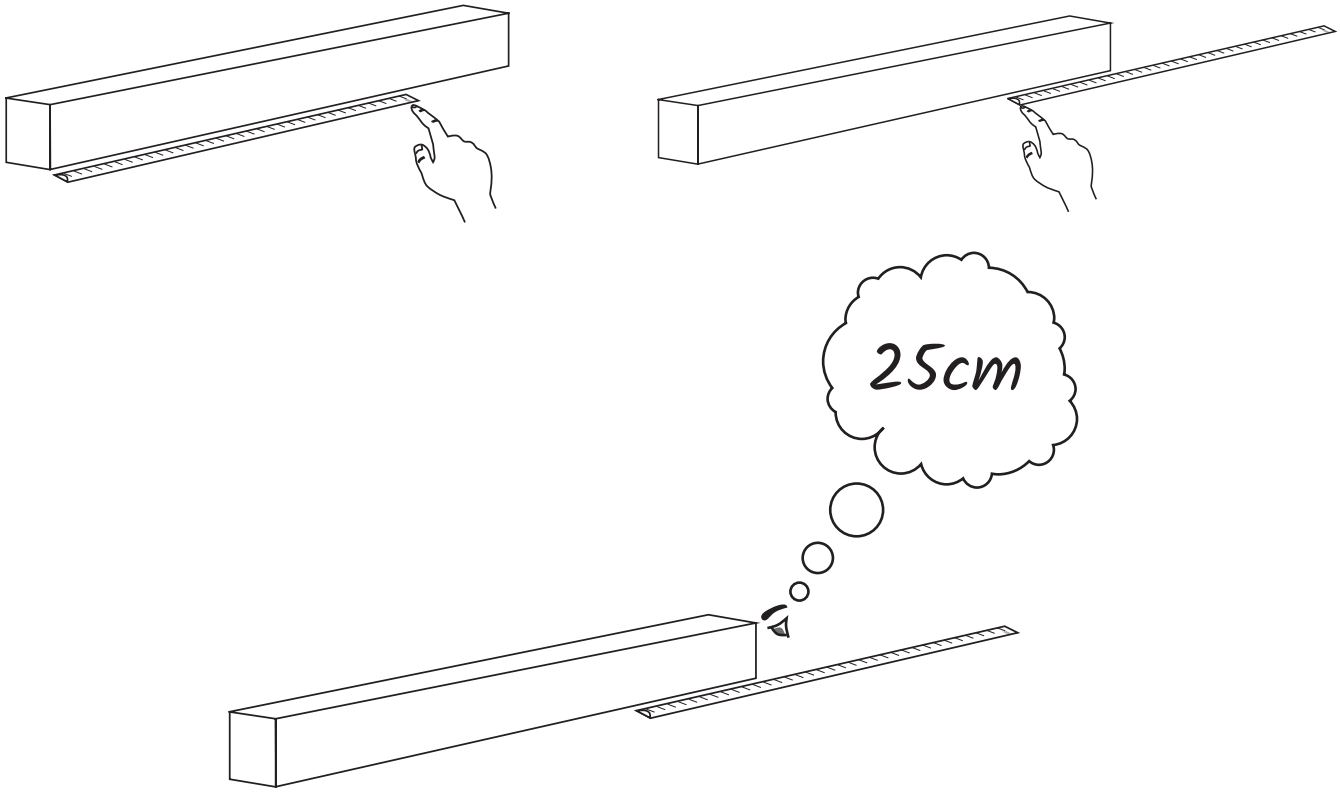
Lesson 66

Measuring Metres and Centimetres

In the last two lessons we've rounded our measurements to the nearest metre. Today we're going to measure the same things more accurately and measure to the nearest centimetre.

Grab your dressmaker's tape measure and follow these steps:

1. Place the zero end of the tape at the start of the object that you are measuring and lay the tape flat next to the object.
2. Place your finger on the floor next to the one metre mark on the tape and don't move it (but don't hold the tape down).
3. Use your other hand to move the zero mark on the tape measure to the spot that your finger is marking.
4. Keeping the zero mark where it is, lay the tape flat next to the object you are measuring.
5. Keep moving the tape until you get close to the end of the object.
6. If you have some tape running past the object, read the number that is closest to the end of the object.
7. Write the size of the object in the last column of the table on pages 92-93 in metres and centimetres. For example, if you moved your tape 3 times and the last time, the number 25 is near the end of the object you are measuring, you would write 2m 25cm. We read this as "2 metres and 25 centimetres."



Lesson 67

Converting Metres and Centimetres

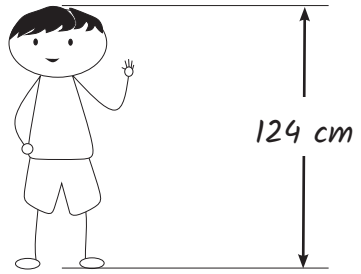
We have seen two ways to measure length, metres and centimetres. We call metres and centimetres different units. There are many different units for measuring length which we will learn about in later years. For now, you only need to know that the smaller the unit, the more accurate the measurement. We saw this in the last few lessons.

When we measure something, we usually use the unit that is most convenient. So to measure this book you would probably use centimetres but to measure your house, metres are more appropriate. BUT sometimes we want to use a smaller unit for accuracy. For example, builders usually measure things to the nearest millimetre which is really small! (A millimetre is the smallest distance between marks on your ruler.) So we often have to convert between units.

Today we're going to learn how to convert measurements that are given in centimetres into measurements that are in metres and centimetres. If you're really keen, you can even go the other way.

Example

Alex is 124 cm tall. How tall is that in metres and centimetres?



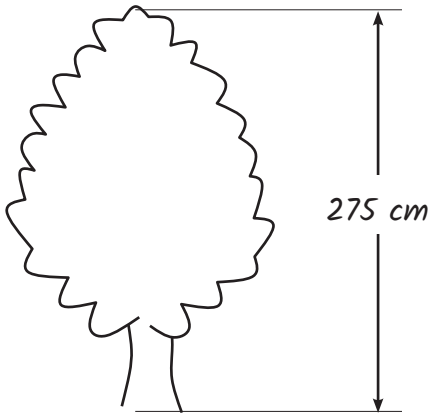
The hundreds digit goes here.

124 cm = 1 m 24 cm

The "rest" of the numbers go here.

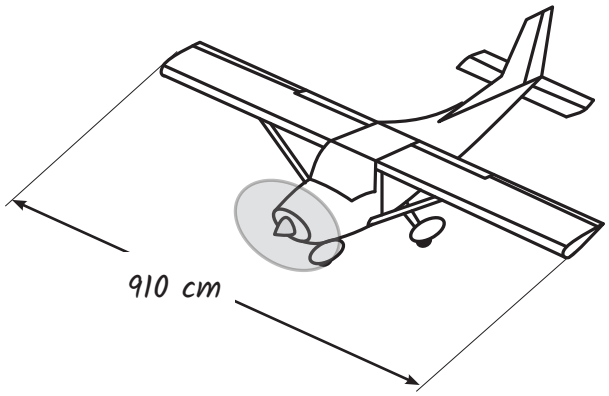
Lesson Practice

The tree is 275 cm tall. How tall is that in metres and centimetres?



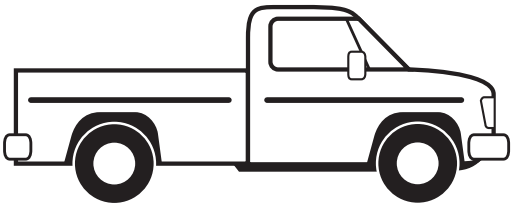
275 cm = _____ m _____ cm

The plane has a wingspan of 910 cm. How wide is that in metres and centimetres?



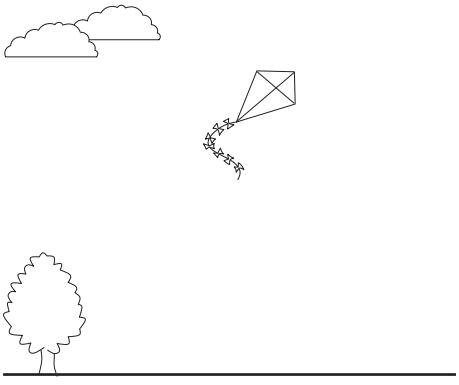
910 cm = _____ m _____ cm

The ute is 538 cm long. How long is that in metres and centimetres?



538 cm = _____ m _____ cm

The kite is 642 cm above the ground. How high is that in metres and centimetres?



642 cm = _____ m _____ cm

Convert to metres and centimetres:

279 cm = _____ m _____ cm

609 cm = _____ m _____ cm

572 cm = _____ m _____ cm

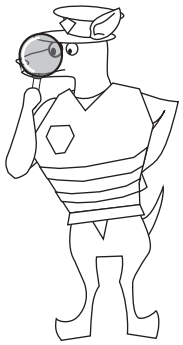
118 cm = _____ m _____ cm

664 cm = _____ m _____ cm

540 = _____ m _____ cm

Lesson 68

Introducing Perimeter



Sergent Dan is on duty! Someone has stolen the famous giant lamington from the Lamington Lane Bakery! My first job is to search the perimeter for any clues. To make sure I don't miss anything, I'm going to have to walk around the entire perimeter of the building. The perimeter is the distance all the way around the outside of any shape: in this case it's the building!

Activity: Measuring Perimeter

What you'll need:

Piece of string

Ruler

Tape measure (maybe)

Something to measure: start with something simple and small enough for you to hold in your hand like a small box or plastic cup.

What to do:

1. Take your piece of string and wrap it snugly around your object exactly one time. Make sure it's not too loose or too tight.
2. Using one hand, pinch the very end of the string.
3. Using your other hand, pinch the string where it first meets the end you are holding. This marks exactly one time around the object.
4. Don't let go of the string from these two pinched spots! Keep holding these two spots tightly to show the perimeter length.
5. Carefully lift the string off the object.
6. Lay the string out straight next to your ruler. Make sure one of your pinched fingers is holding the very end of the string right at the zero mark of the ruler.
7. Read the number on the ruler that is closest to your other pinched finger. That number is the perimeter of your object in centimetres! Write it down below!

My object: _____ Perimeter: _____ cm

Let's try a couple more!

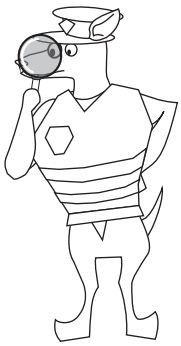
Object: _____ Perimeter: _____ cm

Object: _____ Perimeter: _____ cm

Great job! Why not look around the house for more (and bigger) things to measure just for fun? You can even measure the perimeter of your waist! Remember to use your dressmaker's tape if your ruler is too small.

Lesson 69

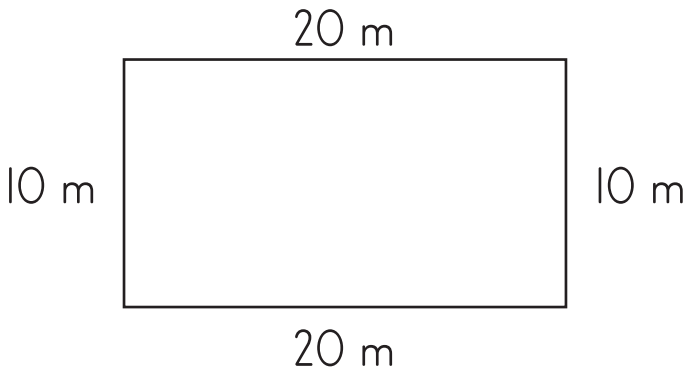
Calculating Perimeter

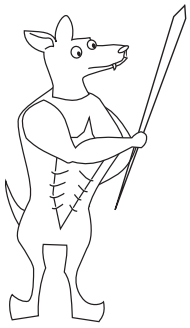


*Time for more detective work. I haven't found the giant lamington yet, but I did find some footprints leading to a park. I need to seal off this park with a fence to keep any clues from escaping. I'm going to need to find out how much wire I need to buy. Now, I **don't** have a tape measure with me to measure it, but I **do** have a drawing of the park. I can **calculate** the perimeter and then I'll know how much fence wire to buy. Watch how I do this calculation then you'll get to practice some of your own!*

Example

The rectangle below shows the size of the park Sergeant Dan needs to buy wire to fence. Calculate the perimeter of the shape. (Diagram not to scale.)



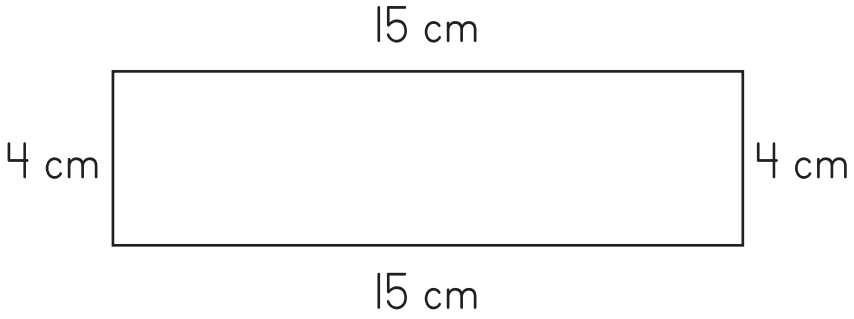


"Not to scale" means that the picture is not drawn the real size and might not even be exactly the same shape as the real thing. The rectangle might be a bit longer and skinnier or shorter and fatter in real life.

Perimeter = 10 m + 20 m + 10 m + 20 m = 60 m

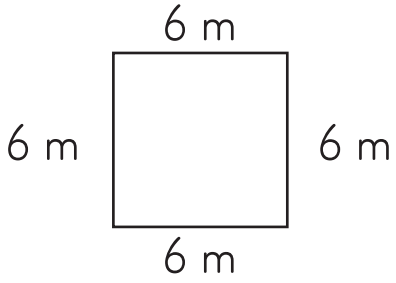
Lesson Practice

Calculate the perimeter of this bookmark:



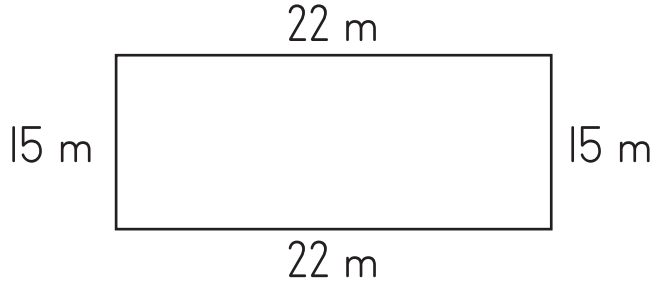
Perimeter = _____

Find the perimeter of this small shed.



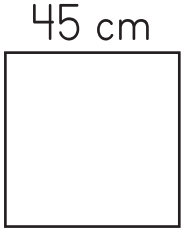
Perimeter = _____

Find the perimeter of this school playground.



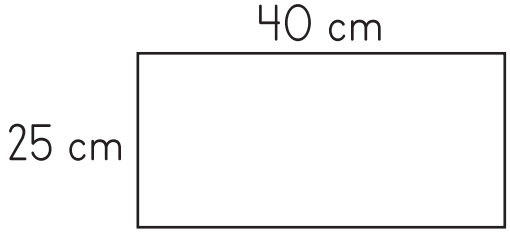
Perimeter = _____

What is the perimeter of this square picture frame?



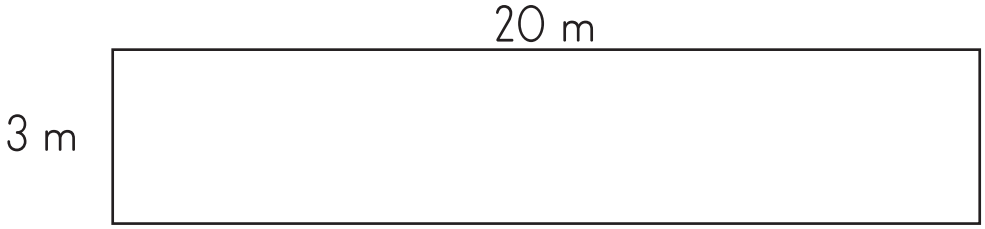
Perimeter = _____

Calculate the perimeter of this cutting board.



Perimeter = _____

Calculate the perimeter of this cricket pitch.

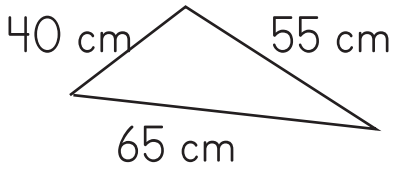


Perimeter = _____

Calculate the perimeter of this large square room.

Perimeter = _____

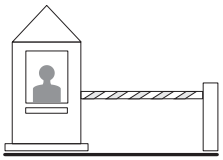
Calculate the perimeter of this triangle flag.



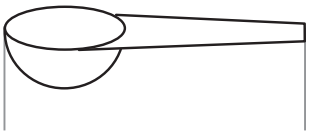
Perimeter = _____

Lesson 70

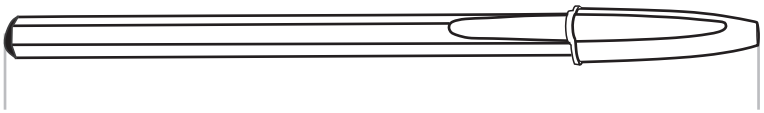
Checkpoint 6



Use your ruler to measure the objects below to the nearest centimetre:



_____ cm



_____ cm

Draw the shape shown on the plan using your ruler and the dot grid below. Make sure your shape's measurements match the labels in the drawing!