Paces For Estimating Metres

Overview

This activity introduces students to the useful practice of using paces to estimate distances. Students measure and adjust their own paces, then use them in an active estimating and measuring exercise.

This activity follows well from '*Making a 5 Metre Measurer*' since the students' measuring strings can be used for the more accurate measuring devices. It also complements '*Estimating Metric Lengths*' which concentrates on estimating shorter lengths.

Skills and Knowledge

- Estimating distances and lengths in metres
- Measuring longer lengths

Preparation and Materials

- Students' 5 metre measurers or long tapes (1 per pair of students)
- Photocopies of Activity Sheet 1 (1 per student) – see * below

Measure out exactly 10 metres in an outdoor area of your training centre with a builder's tape or one of the students' 5 metre strings.

Make long lines on the ground at each end of the 10 metres. These are start and finish lines.

Choose approximately 5 other distances and lengths around your training centre for your estimation exercise. For example:

- The length and/or width of your classroom
- The length of your building
- The length of a path
- The distance from the front gate to the classroom
- The distance from the cafeteria to the office

  * Write these on a copy of Activity Sheet 1 and photocopy (1 per student).

Suggested Procedure

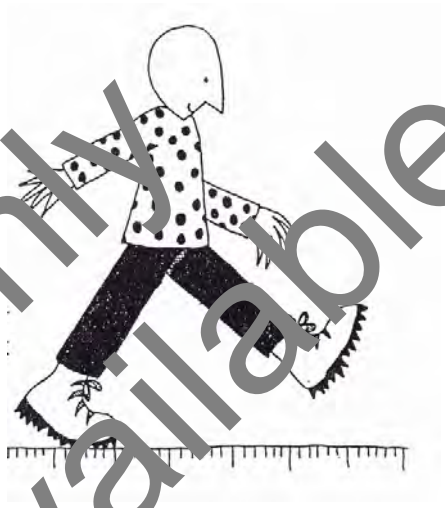
Introducing the idea of 'pacing'

Explain:

- *Many people use paces (long steps) to estimate metres for longish distances around buildings, gardens or sports fields.*
- *They do this in early stages of planning a building, or deciding how much of something, like carpet or drainage pipes, they need to buy.*

To get practical examples relevant to your students ask:

- *Have you ever seen anyone doing this?*
- *What was it being used for?*
- *Have you ever done this yourselves for anything?*



Explain:

- *Some people can take long steps which are exactly 1 metre.*
- *However we don't all have the same length legs so each of us has to find out about our own paces before we can use them to estimate well.*

You may wish to point out that many length measures in the old 'British Imperial System' of measurements were based on an the length of someone's foot (called a foot - ft.) and a longer pace-like length, called a yard, was exactly 3 feet. These measurements are still used in the USA and some trades need to know about them because they use imported American tools and equipment.

Pacing the 10 metres – trial 1

Once the idea of pacing is established, ask students to take a few minutes practising taking long, steady paces that they can keep doing for at least 10 paces.

Explain: *Your paces have to be approximately the same each time – **not** some short some long.*

Next ask the students to pace from the start line to the finish line and count how many paces they take to get there.

It is best to let one or two students do this at a time. Tell them not to count aloud because it will distract other students.

Draw a table on the board as shown.

Explain: *Write beside your name how many paces you took to go 10 metres.*

Name	Number of paces for 10 metres First time	Number of paces for 10 metres Second time
Julia	*12*	
Serafinn	*9*	

Ask students to look at the table and discuss:

- *Did anyone take exactly 10 paces?*
- *Your paces must be approximately 1 metre – this is very good for pacing to estimate metres.*
- *Keep it up for the next try.*

- *Who took **more** than 10 paces?*
- *Your paces must be shorter than 1 metre*
- *Can you try to make longer paces for next time?*

- *Who took **less** than 10 paces?*
- *Your paces must be longer than 1 metre*
- *Can you try to make shorter paces for next time?*

- *Did anyone take closer to 20 paces?*
- *You could estimate by doing 2 paces for each metre.*
- *Keep it up for the next try.*

Pacing the 10 metres – trial 2

Students should now have a second try at pacing the 10 metres. This time try to adjust their stride to be closer to 1 metre or ½ a metre.

Ask them to fill in the second column on the table and compare results.

Explain:

- *If your pace is still a bit too short or long you can make an adjustment when you estimate.*
- *If your paces are a bit less than one metre then you can adjust your estimates by taking off a little bit.*
    - For example if you measure 5 paces then you know the distance is a bit shorter than 5 metres – maybe 4 ½ metres.

- *If your paces are a bit more than one metre then you can adjust your estimates by adding on a little bit.*

- For example if you measure 9 paces then you know the distance is a bit longer than 9 metres – say 9 ½, or nearly 10 metres

If you have shorter students who made ½ metre paces instead (2 paces for each metre). Their adjustment will be to halve the number of paces. For example, if they pace 16 paces their distance is about 8 metres.

Estimating distances with paces

Arrange students in pairs.

Distribute copies of Activity Sheet 1.

Explain:

- *You will be using your paces to estimate the distances and lengths written on this sheet.*
- *First one person should pace the distance while the other makes a record on the sheet.*
- *Then you change roles and the other person paces while their partner makes a record.*
- *You should then compare your estimates.*
- *If they are very different you should both try again.*

Checking the estimate

If there is time, students working in pairs should now measure all the distances with their 5 metre strings or long tapes to see how close their estimates were.

If time is short assign different distances to particular pairs to measure.

At the end of the activity compare the results of all the pairs and discuss whether their 'paces' were good estimates.

Ask:

- *Were your paces better (more accurate) for short distances or long distances?*

Follow up

Advise students to practise this skill at home until they are really good at it.
This activity *'How far does my plane fly?'* is a useful and enjoyable activity to follow this, especially for younger adult learners.

Paces for estimating metrics

Activity Sheet

Name: ……..

Name of partner: ……..

Distance	Number of my paces	My estimate	Actual measure
	paces	*m*	*m*