Just a Minute

(30 minute mandatory lesson at 11am)

How long is a minute?
What can we do in a minute?

You will need:
2 stopwatches
paper & pencils (or other recording implements)

Introduction

Today we are going to be part of a World Record. All around the world, classes will be doing the same lesson at the same time, looking at how accurately we can guess a minute and how many jumping jacks we can do in a minute. It is very important that we all take part, because the record will not count unless we are all doing the same thing in the same thirty minutes.

Depending on the age/attainment level of the young mathematicians in your group, you may want to ensure they know that there are 60 seconds in a minute.

(Allow a short time here for learners to ask questions and for any organisational issues, e.g. making the space safe for jumping.)

Activity 1: Estimate a minute

Tell the learners that they will be sitting with their heads on their arms so that they will not be distracted by others' attempts. When you say go, they will start to estimate or guess when a minute has passed and when they think they have reached a minute sit up and raise a hand.

Note how many guesses are short of a minute and how many are still 'heads down' when a minute is up. You may want to make a tally of how many learners sat up in 10 second segments of the minute as an indication of how accurate the group as a whole were.

If an interactive whiteboard is available, use a silent timer on that, so that learners can record for themselves how many seconds had passed when they sat up.

Repeat the exercise now that the learners have experienced what a minute in that situation feels like and record as before. Discuss whether the second attempt was more or less accurate.

Explain that they will now be doing an activity that will help them 'feel' a minute.

Activity 2: How many jumping jacks in a minute?

Firstly, ensure that all of the learners understand what a jumping jack is. Have one give a demonstration if possible, so that all are doing the same exercise.

Description of a jumping jack:
Begin with the feet together and hands by the sides. Jump on the spot, landing with the feet apart and hands raised so that the arms and legs form an X. Jump again landing back in the first position. This counts as 1 jumping jack.

Divide the group into pairs. In each pair one learner will jump and the other will count. Have each pair estimate how many jumping jacks they think they will be able to do in a minute. Using a stopwatch, give a signal to start and stop jumping. (A whistle will be useful here if available.)

The counter notes down the number that their partner did and then they swap roles and repeat the exercise.

At the end of the activity keep the records of how many jumps learners did as you may want to use them later depending on which follow up activities you intend to use.

Activity 3: Re-estimate a minute

Discuss the various ways the learners could make their estimates more accurate. Some may want to try to use the number of jumping jacks they did to help them 'count' a minute. Others may have heard of other methods, such as 'one one thousand, two one thousand, three one thousand, etc. Or they may have come across 'one Mississippi, two Mississippi,' etc.
Repeat activity one and compare the accuracy with the first attempts.
Discuss which methods were the most effective and give the learners a chance to have a go at one of the others.

This completes the 30 minute lesson. You may wish to follow on with some of the linked activities that follow:

Extension ideas and linked activities:

World records

Research other minute world records and attempt to beat them:
www.guinnessworldrecords.com

Discuss and write down ideas you have for things you can do in 60 seconds to create your own Guinness World Record? This could be bouncing a ball, or writing out tables facts!

Mathematics

Use the results and get the learners to work out the margin of error with the 60 second estimates.

Find the mean (add them together and divide by the number of learners). Does this give a more accurate estimate? *There is a theory called 'The Wisdom of Crowds'. This says that if you ask a number of people to estimate something and then find the mean, this will be more accurate that an individual guess. Use stones in a jar or the weight of something and see if it works for your group.*

Find the mean of the number of jumping jacks.

Work out how many minutes in a day, week, year. How many minutes have you been alive? What do you need to know to make this calculation accurately? *E.g. Leap years, exact time of birth.*

Have the learners write down the numbers 1 to 60. How long did it take? Write them a second time and see how close they can get to writing the numbers 1 to 60 in 60 seconds. How can you pace yourself to get as close to 60 numbers in 60 seconds as possible?

Why do we use twenty-four hours in a day, sixty minutes in an hour and sixty seconds in a minute? The other measurements we use are based on the decimal system, that is in 10s or multiples of 10. Twenty-four and sixty can be divided in many more ways than, for example, twenty and fifty or one hundred which would be the alternatives if time were decimalised. This makes it easier to divide a day into work/school, free time, sleep etc.
Use this as an activity to introduce/practice factorising. Compare the number of factors in twenty with those in twenty-four. It is useful for all learners to have equipment to use to help find the factors – e.g. counters, stones, chairs or even people! How many ways can we arrange the twenty-four counters so that we have rows and columns exactly the same with none left over? *Visual learners – even the highest attainers – will benefit from seeing the factors as arrays rather than just numbers on a page.*

Alternative idea for young and low attaining learners: Count as group, in a circle jumping on the emphasised number following a rhythm.

Count in:	How Many Counts?		Count in:	How Many Counts?
Ones	60			
Twos	30			
Threes				

Science

Investigate/research why we have a leap year every four years. How can we tell if a year is a leap year without counting back/on?

History of Mathematics

Research the contribution to Mathematics of the Babylonians. They used a sexagesimal (counting in 60s) system which was also used by the Sumerians.

You may want to look into other ancient civilisations such as the Greeks, Romans and the Arabic peoples to find what their contributions have been to the Mathematics we still learn today.

Useful links with time resources:

www.guinnessworldrecords.com - create an account in order to search for records to beat.

NRICH time activities
https://nrich.maths.org/10332 - recognising time intervals (Age 5 to 7)
https://nrich.maths.org/4806 - telling time (Age 7 to 11)
https://nrich.maths.org/5483 - clapping rhythm (Age 7 to 11)
https://nrich.maths.org/6044 - A nice reaction timer/data gathering (Age 11 to 13)