

PowerPoint Presentation
to assist the teacher
with class discussions



TI-15 Explorer™ A Tap on the Shoulder



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A Tap on the Shoulder

The purpose of this activity is to investigate the time it takes to pass a tap on the shoulder onto every member of the class and to use this information to work out how long it would take to pass on a tap to 100 people.



Review of Number Patterns

Number patterns can be studied in a number of different ways, such as:

- The continuation of a sequence, for example:

3, 5, 7, 9,.....,.....

In this case the sequence is continued by adding 2 to the previous term.

- The relationship between the value in a sequence and the step in the sequence, for example:

Step	1	2	3	4	5
Value	2	4	6	8	10

In this case the sequence is generated by multiplying the step value by 2.

Review of Number Patterns

- The relationship between the value in a sequence and the step in the sequence, and be more complex and involve more than two operations, for example:

Step	1	2	3	4	5
Value	3	5	7	8	11

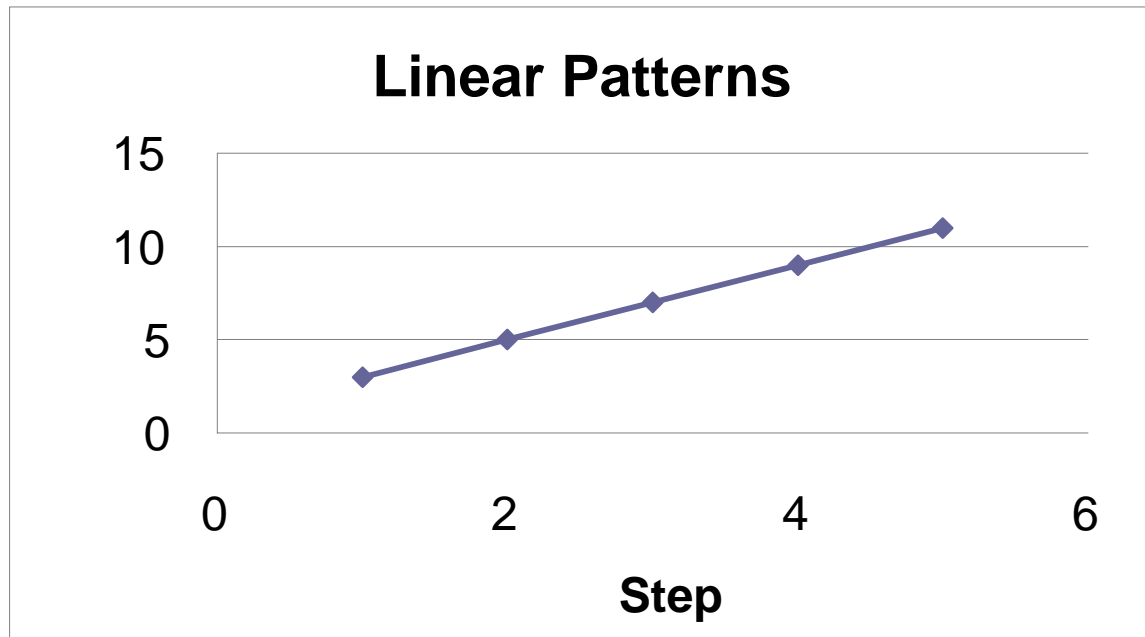
In this case the sequence is generated by multiplying the step value by 2 and adding 1.

Linear Patterns

- Patterns of the type described in the previous examples are all linear patterns because the values fall in a line when graphed.

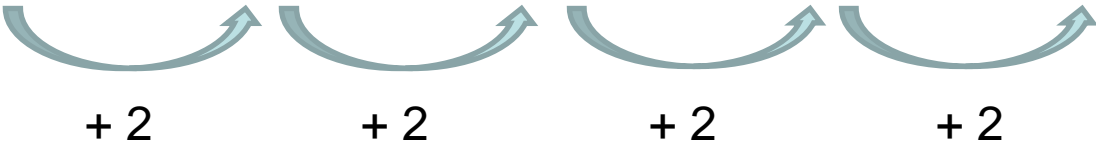
Linear Patterns

Step	1	2	3	4	5
Value	3	5	7	8	11



Linear Patterns

Step	1	2	3	4	5
Value	3	5	7	8	11



The diagram shows a sequence of values: 3, 5, 7, 8, 11. Below the values, four curved arrows point from each value to the next one to its right. Each arrow is labeled with '+ 2', indicating a constant difference of 2 between consecutive terms.

Linear patterns are also characterised by the addition or subtraction of a constant between terms.

This number is the number you would multiply by in a rule to describe the pattern. In this case the rule might be:

Value = two times the step number

Looking closely, it becomes apparent that this rule will be out by one each time. So the rule can be adjusted to:

Value = two times the step number plus one

A Tap on the Shoulder

- Select (or ask for volunteers) five students to stand side by side with their left hands on the shoulders of the person beside them (the last in the line will have no one to put their hand on a shoulder).
- Have a stopwatch handy to record how long it takes for the following event. Tell the left-most student in the line, on a given signal, to tap the shoulder of the person to the left of them, and ask the other students in the line to pass on the tap as soon as they receive it. Tell the student at the end of the line to indicate when they have received the tap.
- After three or four of practices, record the number of students in the line and the time it takes to pass the tap through the line in a table (as in Worksheet 1) so that students can copy a record of the results at the end of the activity.

A Tap on the Shoulder

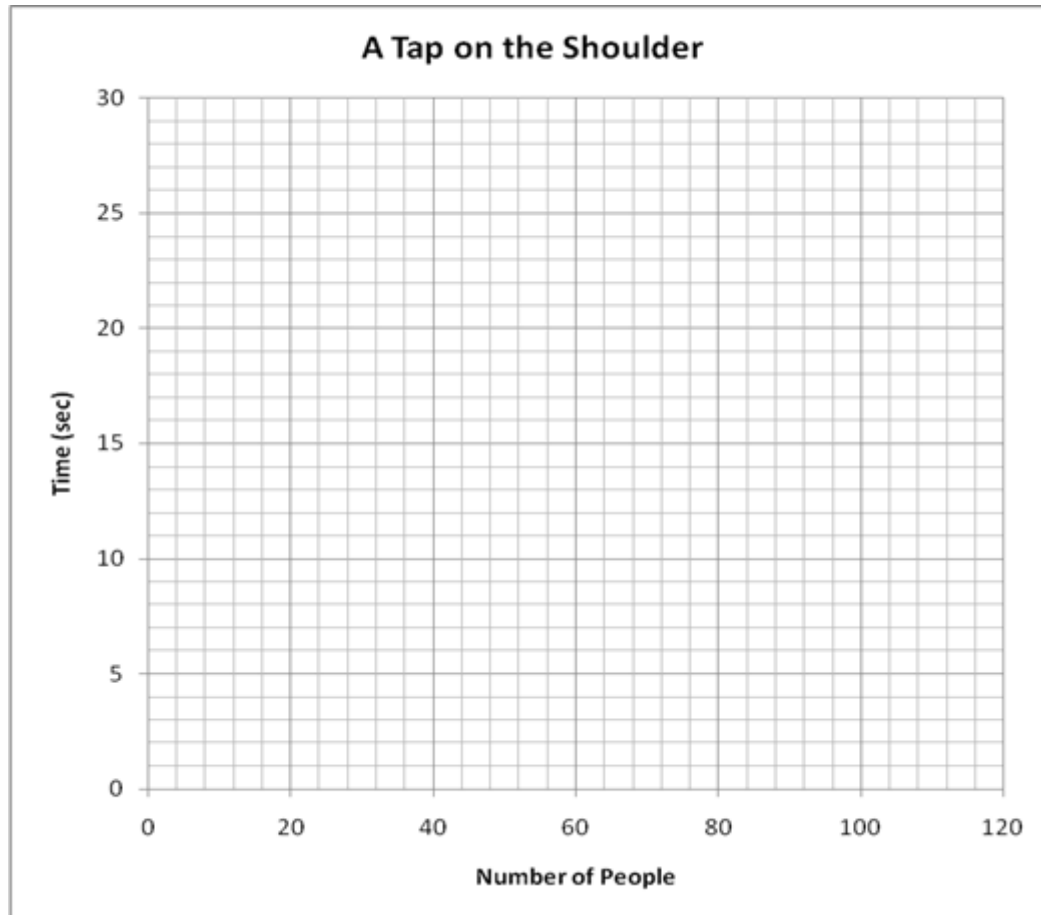
- Select (or ask for volunteers) another five students to join the existing line and repeat step 2 on previous page.
- Continue adding students to the end of the line and repeating the activity until the whole class is involved. It is fine for the last set of students joining the line to be less or more than five as long as the correct number of students is recorded against the time.
- Students should record the data for the activity in the table on Worksheet 1.

A Tap on the Shoulder

Worksheet 1

Number of people	5	10	15	20
Time (sec)						

A Tap on the Shoulder



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To define an operation (formula) first press the Op1 (or Op2) key then type the steps of the operation and then press Op1 (or Op2) to set the operation.



To set the formula

$$t = 0.5 \times n$$

Press Op1 \times 0.5 Op1