| Chapter 9 Linear Relations |  |  |  |
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| $9.1 \quad$ Analysing Graphs if Linear Relations p.337 \#5,6,8,9,11, 12, 15, 16, $\star_{17},{ }^{2} 18$ |  |  |  |


| 9.2 | Patterns in a Table of Values |
| :--- | :--- |


| 9.3 Linear Relationships | p.357 \#6, 7, 9, 11, 12, 14, 15, 17, 19, *20 |
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| 9.4 Chapter Review | p.360 \#1-6,7,9,11, 12, 13, 14, 15 |
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## Unit Test

## Vocabulary

$\qquad$
9.3 Linear Relationships

Evaluate each expression if $x=3$ substitute number in for variable (use brackets)
a) $5 x$

5(3)
b) $x+10$
$(3)+10$
c) $4 x-1$

4(3) - 1
15
13
Is the following relationship linear? Explain how you know.

| $x$ | 0 | 2 | 4 | 6 | 8 | 10 | 12 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $y$ | 1 | 5 | 9 | 13 | 17 | 21 | 25 |

Write an expression for this table.

$$
\begin{aligned}
& \text { for this table. } \leftarrow+1 \text { comes from when } x=0 \\
& 2 x+1
\end{aligned}
$$

What would $y$ be if $x$ was 16 ?

$$
\begin{aligned}
& \text { would } y \text { be if } x \text { was 16? } \\
& \begin{array}{ll}
(x, 2 x+1) & (16,33)
\end{array} \quad 2(16)+1 \\
&
\end{aligned} \quad=33.4 .
$$

Graphing a Formula
The speed of sound is 300 m per second. This is expressed using the formula:
$d=300 t$ same as using an expression where $d$ is the distance in meters and $t$ is the time in seconds.


Could you make a prediction for how far the sound travels in 2.5 seconds?
(1) read graph
(2) substitute
2.5 into formula

$$
\begin{aligned}
d & =300(2.5) \\
& =750
\end{aligned}
$$

Sometimes, you may use integers instead of whole numbers:
Use the linear equation. $y=2 x+1$ to make a table and construct a graph


Considerations:
What number should I use for $x$ ? $O$ is a good start
How many numbers should I pick?
you need at least 2 that fit on your graph.
Use your relationship to determine the missing number in $(4, y)$
the $x=4$
So

$$
\begin{aligned}
& y=-2(4)+1 \\
& y=-7
\end{aligned}
$$

Summary
A formula is: an expression or rule that tells you how to make the second number if you know a first number.
A graph can be made from a formula or relationship by:
choosing at least 2 numbers for $x$, and then substituting those into your formula.

P357 \#6,9, 11, 12, 14, 15 91

$$
17,19
$$

