



## MATCHING EQUATIONS

Match each of the following word problems to its equation and solution.

<b>W1.</b> Busi is 5 years younger than Xoli and Xoli is 14 years old. How old is Busi?	<b>E1.</b> $6x = 144$	<b>S1.</b> <b>8</b>
<b>W2.</b> Four apples and 8 bananas cost 100 rand. Apples cost 9 rand. How much do bananas cost in rand?	<b>E2.</b> $2x - 12 = 96$	<b>S2.</b> <b>36</b>
<b>W3.</b> When two numbers are multiplied together the product is 144. One number is 6. What is the other number?	<b>E3.</b> $14 - x = 5$	<b>S3.</b> <b>54</b>
<b>W4.</b> If the sum of two numbers is 96 and their difference is 12 what is the larger number?	<b>E4.</b> $4x = 144$	<b>S4.</b> <b>9</b>
<b>W5.</b> The perimeter of a square is 144 centimetres. What is the length of a side?	<b>E5.</b> $36 + 8x = 100$	<b>S5.</b> <b>24</b>

Then make up your own word problem, equation and solution.

## HELP

If you are struggling to get started – that’s good because your brain connections grow best when you struggle, keep trying, make mistakes, put them right, and finally succeed. Then you learn best and you get better and better at doing maths. You can do it!

Try starting with one of the S cards and try to see which equation it matches and which word problem it corresponds to. When you have those 3 cards matched, take another S card and see which equation it matches... and so on.

**Or, before you match the cards you could start by working out which of the 4 calculations given is used to find the answer to the question.**

A. Busi is 5 years younger than Xoli and Xoli is 14 years old. How old is Beth?

1.  $14 + 5$
2.  $14 - 5$
3.  $14 \times 5$
4.  $14 \div 5$

B. Four apples and 8 bananas cost 100 pence. Apples cost 9 pence. How much do bananas cost.

1.  $100 \div 8 + 4 \times 9$
2.  $(100 - 4 \times 9) \div 8$
3.  $100 + 4 \times 9 + 8$
4.  $100 + 9 - 4 + 8$

C. When two numbers are multiplied together the product is 144. One number is 6. What is the other number?

1.  $144 - 6$
2.  $144 + 6$
3.  $144 \times 6$
4.  $144 \div 6$

D. If the sum of two numbers is 96 and their difference is 12 what is the larger number?

1.  $(96 - 12) \div 2$
2.  $(96 + 12) \div 2$
3.  $96 + 12 \div 2$
4.  $96 - 12 \div 2$

E. The perimeter of a square is 144 centimetres. What is the length of a side?

1.  $144 + 4$
2.  $144 \times 4$
3.  $144 - 4$
4.  $144 \div 4$

## NEXT

Make up a similar activity of your own? Or, a bit more challenging, you could create an activity with an ‘odd one out’, that is, one number on a S card that does not satisfy any of the equations. Then other learners can be given this task and asked to match the cards, spot the odd one out, and provide the correct solution.

<p><b>W1.</b> Busi is 5 years younger than Xoli and Xoli is 14 years old. How old is Busi?</p>	<p><b>E1.</b> <math>6x = 144</math></p>	<p><b>S1.</b> <b>8</b></p>
<p><b>W2.</b> Four apples and 8 bananas cost 100 rand. Apples cost 9 rand. How much do bananas cost in rand?</p>	<p><b>E2.</b> <math>2x - 12 = 96</math></p>	<p><b>S2.</b> <b>36</b></p>
<p><b>W3.</b> When two numbers are multiplied together the product is 144. One number is 6. What is the other number?</p>	<p><b>E3.</b> <math>14 - x = 5</math></p>	<p><b>S3.</b> <b>54</b></p>
<p><b>W4.</b> If the sum of two numbers is 96 and their difference is 12 what is the larger number?</p>	<p><b>E4.</b> <math>4x = 144</math></p>	<p><b>S4.</b> <b>9</b></p>
<p><b>W5.</b> The perimeter of a square is 144 centimetres. What is the length of a side?</p>	<p><b>E5.</b> <math>36 + 8x = 100</math></p>	<p><b>S5.</b> <b>24</b></p>

NOTES FOR TEACHERS

**SOLUTION**

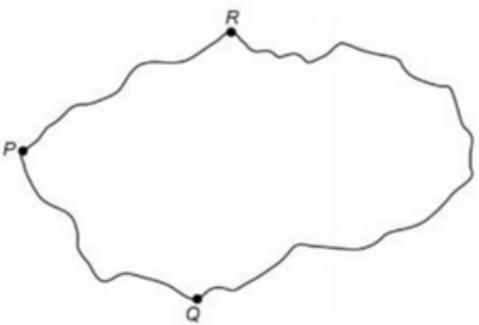
- W1 E3 S4;
- W2 E5 S1;
- W3 E1 S5;
- W4 E2 S3;
- W5 E4 S2

**Diagnostic Assessment** This should take about 5–10 minutes.

1. Write the question on the board, say to the class:  
**“Put up 1 finger if you think the answer is A, 2 fingers for B, 3 fingers for C and 4 fingers for D”.**
2. Notice how the learners responded. Ask a learner who gave answer A to explain why he or she gave that answer and DO NOT say whether it is right or wrong but simply thank the learner for giving the answer.
3. Then do the same for answers B, C and D. Try to make sure that learners listen to these reasons and try to decide if their own answer was right or wrong.
4. **Ask the class again to vote for the right answer by putting up 1, 2, 3 or 4 fingers. Notice if there is a change and who gave right and wrong answers.** It is important for learners to explain the reason for their answer otherwise many learners will just make a guess.
5. If the concept is needed for the lesson to follow, explain the right answer or give a remedial task.

Towns P, Q and R are connected by roads PQ, PR and QR.

PR is 10 km longer than PQ.  
 QR is twice as long as PR.  
 The total length of the three roads is 170 km



Not drawn accurately

Work out the length of PQ.

- A) 45 km
- B) 35 km
- C) 90 km
- D) 70 km

**The correct answer is B.**

Just check each answer. It is not necessary to find the equation or to solve the equation.  
 If  $PQ=35$  then  $PR=45$  and  $QR=90$  so  
 $PQ + QR + PR = 90 + 45 + 35 = 170$

**Possible misconceptions:**

It's possible that learners giving other answers just made a guess. Or they might have tried to construct and solve the equation and got it wrong.

<https://diagnosticquestions.com>

**Why do this activity?**

Learners need a lot of practice in reading and interpreting questions and formulating an algebraic equation from the information given. This activity provides practice of this sort in a playful and undemanding way.

**Learning objectives**

In doing this activity students will have an opportunity to:

- practise reading and interpreting information given;
- practise checking solutions to see if they satisfy equations;
- practise in solving simple linear equations.



## Generic competences

*We need to prepare children for a job market where existing knowledge and skills have limited value unless they can be applied in novel ways to produce new knowledge that solves today's complex problems to improve the quality of life for all.*

In doing this activity students will have an opportunity to:

- **think mathematically**, reason logically and give explanations;
- **think flexibly**, be creative and innovative - to apply knowledge and skills;
- interpret information and **solve problems**.

## Suggestions for teaching

Make copies of the table and give it to the learners to cut out into 15 separate cards. Then they can either work in pairs or in small groups and match the cards into sets.

Alternatively copy the cards in very large writing onto 15 separate sheets of A4 paper and stick them on the board in a random order. Ask the learners to work in pairs to match each word problem with its equation and solution.

Those who finish first can make up their own word problem, equation and solution. This could be a homework task.

Then ask the learners to come up to the board one at a time to rearrange the sheets stuck on the board into the 5 sets.

Finally check the word problems, equations and solutions invented by the learners and mix them up in a similar way and ask all the learners to put these sets together.

## Key questions

- What does the question tell you?
- Can you find any equations from the information given?
- Do any of the numbers give a solution to that equation?

## Follow-up ideas

Interpreting Equations <https://aiminghigh.aimssec.ac.za/grades-8-10-interpreting-equations/>

What's it worth? <https://aiminghigh.aimssec.ac.za/grades-7-and-8-whats-it-worth/>

Banana, Clock, Hexagon <https://aiminghigh.aimssec.ac.za/years-6-to-8-bananas-clock-and-hexagon/>

<b>Note:</b> The Grades or School Years specified on the AIMING HIGH Website correspond to Grades 4 to 12 in South Africa and the USA, to Years 4 to 12 in the UK and up to Secondary 5 in East Africa. New material will be added for Secondary 6. For resources for teaching A level mathematics see <a href="https://nrch.maths.org/12339">https://nrch.maths.org/12339</a> <b>Note:</b> The mathematics taught in Year 13 (UK) and Secondary 6 (East Africa) is <b>beyond</b> the school curriculum for Grade 12 SA.				
	Lower Primary or Foundation Phase Age 5 to 9	Upper Primary Age 9 to 11	Lower Secondary Age 11 to 14	Upper Secondary Age 15+
South Africa	Grades R and 1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
USA	Kindergarten and G1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
UK	Reception and Years 1 to 3	Years 4 to 6	Years 7 to 9	Years 10 to 13
East Africa	Nursery and Primary 1 to 3	Primary 4 to 6	Secondary 1 to 3	Secondary 4 to 6