

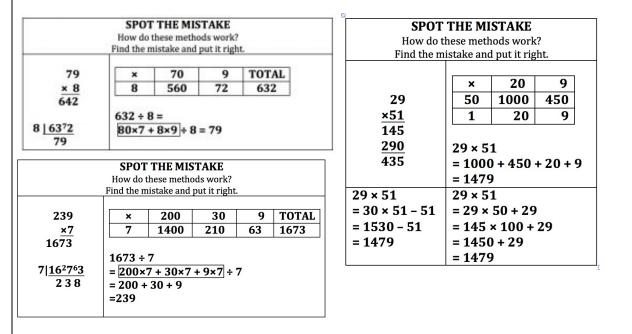
AFRICAN INSTITUTE FOR MATHEMATICAL SCIENCES SCHOOLS ENRICHMENT CENTRE (AIMSSEC)

AIMING HIGH

SPOT THE MISTAKE

Here are some calculations.

There are some mistakes and some correct methods and correct answers. Find the mistakes and write out the correct calculation using that method. Explain how and why the methods that get the correct answers work.



HELP

If you are stuck with the SPOT THE MISTAKE task the do the following.

- Do the calculations using any method you choose, and then check your calculation using a calculator.
- If you got it wrong look for your own mistake. If you can't find it, ask for help.

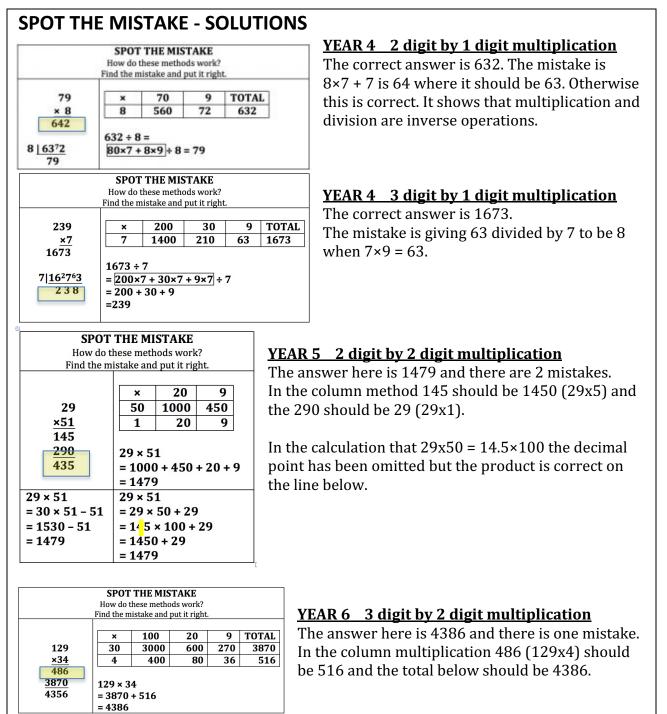
If you get the calculation correct then have a go at spotting the mistakes in the example.

	SPOT THE MISTAKE How do these methods work?					SPOT THE MISTAKE How do these methods work? Find the mistake and put it right.					
	Find the m	istake and p	ut it right.	6)			×	100	20	9	TOTAL
	×	100	20	9	TOTAL	129	500	50000	10000	4500	64500
420				-							
129	30	3000	600	270	3870	×512	10	1000	200	90	129
<u>×34</u>	4	400	80	36	516	258	2	200	40	18	25
486 <u>3870</u> 4356	129 × 34 = 3870 + 516 = 4386				1290 <u>64500</u> 65948	<u>)</u> 129 × 512					

Make up your own written calculation, and then write it out with a deliberate mistake for your partner to spot and correct.

NOTES FOR TEACHERS

One of these 'spot the mistake' examples makes a good lesson starter. **Do only one each day.** First ask the learners to do the calculation themselves. Then show them the example and ask them to find the mistake and to explain what has gone wrong. Ask the learners to explain how the methods work and why.



SPOT THE MISTAKE								
	How do these methods work?							
Find the mistake and put it right.								
	×	100	20	9	TOTAL			
129	500	50000	10000	4500	64500			
×512	10	1000	200	90	1290			
258	2	200	40	18	258			
1290 64500 65948	129 × 512 = 64500 + 1290 + 258 = 66048							

YEAR 6 3 digit by 3 digit multiplication

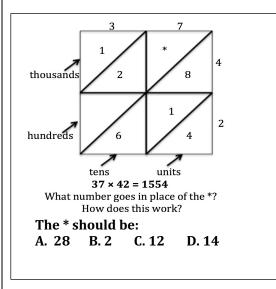
The answer here is 66048 and this time the mistake is in the addition in the column multiplication. The numbers 258, 1290 and 64500 are correct but the 1 is not carried over from the tens to the hundreds column in the addition.

Diagnostic Assessment

This quiz introduces a different method. The learners may not have seen the method before or may not remember it. After your group has done the other examples, use the quiz to help the learners to figure out how the method works and to explain it.

Show your learners the question and say:

"Put up 1 finger if you think the answer is A, 2 fingers for B, 3 for C and 4 fingers for D".



1.Notice how the learners respond. Ask them to explain why they gave their answers and DO NOT say whether the answers are right or wrong but simply thank the learner for giving the answer.

2. It is important for learners to explain the reason for their answer otherwise many learners will just make a guess. Try to ensure that learners listen to each other and try to decide if their first answer was right or wrong. 3.Ask the learners 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.

B. is the correct answer.

Reading the thousands, hundreds, tens and units diagonally gives

$$1000 + (4 \times 100) + (15 \times 10) + 4 = 1554$$

Common Misconceptions

A. The learner knows $7 \times 4 = 28$ goes in this quarter but does not understand that this triangle should have the hundreds value.

C. The learner may have multiplied 3×4 without understanding the process or relevance of place value. **D**. Learner may have multiplied 7×2 without understanding the process or relevance of place value. <u>https://diagnosticquestions.com</u>

Why do this activity?

Learners need practice in doing routine calculations and this activity gives them the necessary practice in an unusual way. More importantly, it encourages learners to think for themselves. It is often helpful to allow learners to work in pairs so that they can talk about the methods and exchange ideas. They will probably do the calculation to find out the correct answer if they don't spot the mistake straight away. They are also reminded how the working can be set out.

Also they have to understand the reasons for the working and not just the steps in the calculation process. They will gain a better understanding of multiplication and division by thinking about different methods of calculation and why the different methods work.

Learning objectives

In doing this activity students will have an opportunity to:

- practise doing routine calculations and to check calculations;
- deepen their understanding of multiplication and division.

Generic competences

In doing this activity students will have an opportunity to:

- apply knowledge and skills;
- gain number sense, and the ability to estimate answers to calculations, so that they can spot answers given by a calculator or computer that are obviously wrong. This is an important skill because, when rubbish is keyed into an automatic processor, rubbish has come out.

Suggestions for Teaching

Use these examples as lesson starters. They can be used in secondary school as well as in primary school.

Follow up

Ask the learners to make up their own written calculation, and then write it out with a deliberate mistake for someone else to spot and correct.

Target Multiplication https://aiminghigh.aimssec.ac.za/years-4-7-target-multiplication/

And other 'Target' activities.

Two by Two Puzzle https://aiminghigh.aimssec.ac.za/years-4-7-two-by-two-puzzle/

Magic Numbers https://aiminghigh.aimssec.ac.za/years-5-9-magic-numbers/

Note: 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	s 4 to 12 in the UK and up to S	econdary 5 in East Africa. Ne	ew material will be added for	Secondary 6.				
For resources	for teaching A level mathemat	ics see https://nrich.maths.org	<u>g/12339</u>					
Note: The mathematics taught in Year 13 (UK) and Secondary 6 (East Africa) is beyond the school curriculum for Grade 12 SA.								
	Lower Primary	Upper Primary	Lower Secondary	Upper Secondary				
	Age 5 to 9	Age 9 to 11	Age 11 to 15	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				