MULTIPLICATION DIVISION

What do you notice about the numbers in square A?

Write numbers in the blank boxes in squares B, C and D to make the same patterns as in square A.

A.

3	5	**15**
2	8	**16**
6	**40**	**×÷**

B.

3	7	
12	6	
		×÷

C.

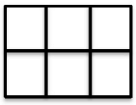
4	9	
3		**24**
	72	**×÷**

D.

5		**55**
	3	
45		**×÷**

Cards 1 to 16 give clues about the numbers in the squares.

Match 4 cards to each square. Line the cards up under the squares A, B, C and D.

1. 	**2. The sides of this regular pentagon are 9 cm. How far is it to go all the way round (perimeter)?** 	**3.** **? × 9 = 72**	**4.** **33 ÷ 3 = ?**
5. **This string has 55 beads with the same number of red, blue, green, pink and white beads. How many red?**	**6.** **3 × ? = 36**	**7.** **3 × ? = 15**	**8.** **40 children line up in 8 rows. How many in a row?**
9. **16 ÷ ? = 8**	**10.** **72 ÷ 6 =12**	**11.** **Area of this rectangle?** 	**12.** **How many days in 6 weeks?**
13. **36 sweets are shared between 9 children.**	**14.** **? × 9 = 27**	**15.** **24 ÷ 8 = ?**	**16.** **oooo oooo oooo**

Make up your own M D square and clue cards to go with it

HELP

This task is called MD for **M**ultiplication/**D**ivision. For any 3 numbers you can write the relationship between them in 4 ways, for example

3 × 5 = 15, 5 × 3 = 15, 15 ÷ 5 = 3, 15 ÷ 3 = 5

Cut out the cards on page 3.

Look at cards 7, 8, 9 and 11. They all represent square A. Why?

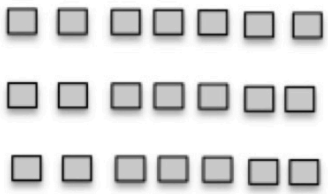
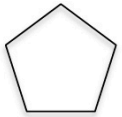
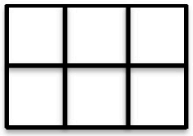
Now try to fill in the other squares and match the cards.

NEXT

Make up your own MD squares and clue cards and then exchange them and work on the task set by the other person. You might make your puzzle as a group and exchange with another group.

Clue cards for MD activity

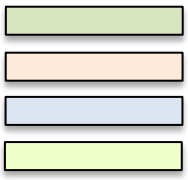
Cut out the 16 cards

1. 	2. The sides of this regular pentagon are 9 cm. How far is it to go all the way round (perimeter)? 	3. $? \times 9 = 72$	4. $33 \div 3 = ?$
5. This string has 55 beads with the same number of red, blue, green, pink and white beads. How many red?	6. $3 \times ? = 36$	7. $3 \times ? = 15$	8. 40 children line up in 8 rows. How many in a row?
9. $16 \div ? = 8$	10. $72 \div 6 = 12$	11. Area of this rectangle? 	12. How many days in 6 weeks?
13. 36 sweets are shared between 9 children.	14. $? \times 9 = 27$	15. $24 \div 8 = ?$	16. oooo oooo oooo

NOTES FOR TEACHERS

SOLUTION

A. 7, 8, 9, 11
B. 1, 6, 10, 12
C. 3, 13, 15, 16
D. 2, 4, 5, 14



3	5	**15**
2	8	**16**
6	**40**	**×÷**

A

3	7	21
12	6	72
36	42	**×÷**

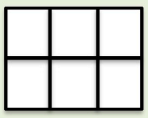
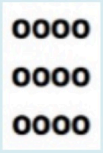
B

4	9	36
3	8	**24**
12	**72**	**×÷**

C

5	11	**55**
9	3	27
45	33	**×÷**

D

1. 	2. The sides of this regular pentagon are 9 cm. How far is it to go all the way round (perimeter)? 	3. **? × 9 = 72**	4. **33 ÷ 3 =**
5. This string has 55 beads with the same number of red, blue, green, pink and white beads. How many red?	6. **3 × ? = 36**	7. **3 × ? = 15**	8. 40 children line up rows. How many in row?
9. **16 ÷ ? = 8**	10. **72 ÷ 6 =12**	11. Area of this rectangle? 	12. How many days in weeks?
13. 36 sweets are shared between 9 children.	14. **? × 9 = 27**	15. **24 ÷ 8 = ?**	16. 

Diagnostic Assessment This should take about 5–10 minutes.

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 for C and 4 for D".

I buy a bag of 17 oranges and pay 85 cents. What does one orange cost? Which calculation gives the answer?

A. 85 × 17 B. 85 – 17 C. 17 ÷ 85 D. 85 ÷ 17

1. 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.
2. It is important for learners to explain the reason for their answer to develop their oral communication and thinking skills. Putting thoughts into words can make people think more clearly.
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.**
5. The concept is needed for the lesson so explain the right answer or give a remedial task.

D. is the correct answer.

Common Misconceptions

Learners often have difficulty using the information given and to answer the question so they may just combine the numbers given in some random way.

Why do this activity?

This activity gives learners practice in multiplication and division of 1 digit numbers in a way that will seem to the learners like playing a game. At the same time the teacher will be able to see from the way in which the learners tackle this task how much understanding they have of the operations of multiplication and division so she can use the activity for formative assessment. The activity also helps to build an understanding that multiplication and division are inverse processes.

Learning objectives

In doing this activity students will have an opportunity to:

- practise in multiplication and division of 1 digit numbers.
- deepen understanding of the operations of multiplication and division and that these are inverse processes.

Generic competences

In doing this activity students will have an opportunity to:

- **think flexibly**, be creative and innovative and apply knowledge and skills;
- **visualize** and develop the skill of interpreting and creating visual images to represent concepts and situations;
- **work in a team**:
  - collaborate and work with a partner or group
  - have empathy with others, listen to different points of view
  - develop leadership qualities;

- **communicate** in writing, speaking and listening according to the audience:
  - exchange ideas, criticise, and present information and ideas to others
  - analyze, reason and record ideas effectively;

Suggestions for teaching

Plan for the learners to work in groups of 4. Make copies of cards 1 to 16 for each group and cut the cards out. Either make photocopies of squares A, B, C and D for each group or copy the squares on the board. Collect the cards at the end of the lesson to use with other classes.

You might arrange the groups so that the learners who are likely to struggle work with more able learners. Tell the learners that they must explain their answers to each other and they must make sure everyone in the group understands before they go on because you will choose the person from each group to explain the group's answers. Your class should be accustomed to you picking learners at random, and sometimes picking on the low attaining learners, to answer on behalf of their group.

Draw square A on the board and ask the learners what they notice about the numbers in the square. Write what they say on the board. Keep asking "Do you notice anything else?" until you have 8 multiplication facts and 8 division facts written on the board.

SQUARE A	
MULTIPLICATION FACTS	**DIVISION FACTS**
3 × 5 = 15 **5 × 3 = 15**	**15 ÷ 3 = 5** **15 ÷ 5 = 3**
2 × 8 = 16 **8 × 2 = 16**	**16 ÷ 2 = 8** **16 ÷ 8 = 2**
3 × 2 = 6 **2 × 3 = 6**	**6 ÷ 3 = 2** **6 ÷2 = 3**
5 × 8 = 40 **8 × 5 = 40**	**40 ÷5 = 8** **40 ÷ 8 = 5**

Give out the 16 cards, one set to each group, and give them a few minutes to find the 4 cards that go with square A. While the learners are busy with this copy squares B, C and D on the board. Then ask the learners to say which 4 cards they have chosen as clues for square A and to explain why. Take different explanations in order to help the less confident learners.

Tell the class that they have to copy squares B, C and D into their notebooks and fill in the empty boxes. Tell them that they must find 4 clue cards to go with each square that will help them to fill in the boxes.

In the plenary ask learners to fill in the empty boxes in squares B, C and D, to say which clue cards match each square and to explain why.

Key questions

Can you give me any more multiplication facts from that square?

Can you give me any more division facts from that square?

How many ways can you make multiplication and division facts from those 3 numbers?

Can you explain why that clue card goes with that square?

Follow up

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

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

Target Division https://aiminghigh.aimssec.ac.za/years-5-7-target-division/

Magic of 37 https://aiminghigh.aimssec.ac.za/years-4-to-7-magic-of-37/

Digit Detective https://aiminghigh.aimssec.ac.za/years-4-7-digit-detective/

A Square of Numbers
https://aiminghigh.aimssec.ac.za/years-4-7-a-square-of-numbers/

Multiplication Squares https://aiminghigh.aimssec.ac.za/years-4-7-multiplication-squares/

Go to the **AIMSSEC AIMING HIGH** website for lesson ideas, solutions and curriculum links: http://aiminghigh.aimssec.ac.za

Subscribe to the **MATHS TOYS YouTube Channel**
https://www.youtube.com/c/mathstoys

Download the whole AIMSSEC collection of resources to use offline with the **AIMSSEC App** see https://aimssec.app or find it on Google Play.

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 4 to 12 in the UK and school years up to Secondary 5 in East Africa.
New material will be added for Secondary 6.
For resources for teaching A level mathematics (Years 12 and 13) see https://nrich.maths.org/12339
Mathematics taught in Year 13 (UK) & Secondary 6 (East Africa) is beyond the SA CAPS curriculum for Grade 12

	Lower Primary Approx. Age 5 to 8	Upper Primary Age 8 to 11	Lower Secondary Age 11 to 15	Upper Secondary Age 15+
South Africa	Grades R and 1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
East Africa	Nursery and Primary 1 to 3	Primary 4 to 6	Secondary 1 to 3	Secondary 4 to 6
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