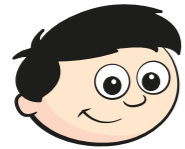


# Make and test conjectures

1



To find the lowest common multiple of two numbers, you multiply them together.

a) Give an example to show when Dexter's statement is true.

This is true when finding the LCM of  and

b) Give an example to show when Dexter's statement is false.

This is false when finding the LCM of  and

2

Decide whether the conjectures are always, sometimes or never true.

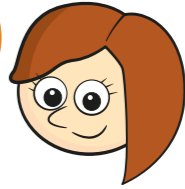
Conjecture	Always true	Sometimes true	Never true
An even number plus an even number always gives an even answer.			
$a + b = b + a$			
$a - b = b - a$			
$2a = 5a$			

Discuss your answers with a partner.



3

I think when you add the factors of a number (other than the number itself), the sum will always be less than the number.



Rosie's statement is sometimes correct.

a) Give an example of when Rosie's statement is correct.

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b) Give an example of when Rosie's statement is not correct.

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4

Annie investigates the sum of two prime numbers.

- She finds that  $5 + 7 = 12$
- She also finds that  $23 + 31 = 54$

Annie conjectures that the sum of two prime numbers greater than 2 is always equal to a multiple of 2

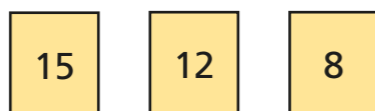
Prove that Annie is correct.

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- 5 Here are three number cards.



Find the three differences between each pair of numbers.

Work out the product of the differences.

$15 - 12 =$ <input type="text"/>	$15 - 8 =$ <input type="text"/>	$12 - 8 =$ <input type="text"/>
Product of differences = <input type="text"/> $\times$ <input type="text"/> $\times$ <input type="text"/> = <input type="text"/>		

Repeat with three different integers.

What do you notice about the product in each case? Is this always true?

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- 6 Filip finds that the LCM of 5 and 6 is 30

He also finds that the LCM of 17 and 18 is 306

He notices that  $5 \times 6 = 30$  and  $17 \times 18 = 306$

Filip conjectures that the LCM of two consecutive numbers is equal to the product of the two numbers.

Investigate Filip's conjecture.

- 7 Choose a 2-digit number.

Use a calculator to divide by 99

Make a conjecture about the decimal equivalents of a fraction with a denominator of 99

Test some answers and then make a conjecture.

My conjecture is \_\_\_\_\_

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- 8 Take any 2-digit number and add it to the reverse of the 2-digit number.

For example,  $54 + 45 = 99$

Investigate with other examples. What do you notice?

Write a conjecture from your findings.

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Can you use counters or cubes to prove it?

Test your conjecture using 3-digit numbers.

