11 **a** Write each of these numbers as a product of prime numbers.
i 15 **ii** 15^2 **iii** 28
iv 28^2 **v** 36 **vi** 36^2
b What do you notice about your answers to **i** and **ii**, **iii** and **iv**, **v** and **vi**?
c If $96 = 2^5 \times 3$, show how to find the prime factors of 96^2. Will your method work for all numbers?

12 $40 = 2 \times 2 \times 2 \times 5$ and $28 = 2 \times 2 \times 7$
Use these facts to find
a the HCF of 40 and 28 **b** the LCM of 40 and 28.

13 $450 = 2 \times 3 \times 3 \times 5 \times 5$ and $60 = 2 \times 2 \times 3 \times 5$
Use these facts to find
a the HCF of 450 and 60 **b** the LCM of 450 and 60.

14 $180 = 2^2 \times 3^2 \times 5$ and $54 = 2 \times 3^3$
Use these facts to find
a the HCF of 180 and 54 **b** the LCM of 180 and 54.

15 **a** Write 45 as a product of prime numbers.
b Write 75 as a product of prime numbers.
c Find the LCM of 45 and 75.
d Find the HCF of 45 and 75.

16 **a** Draw factor trees to find the LCM of 90 and 140.
b Compare your answer with a partner's. Did you draw the same factor trees? Have you both got the same answer?

17 **a** Write 396 as a product of prime numbers.
b Write 168 as a product of prime numbers.
c Find the HCF of 396 and 168.
d Find the LCM of 396 and 168.

18 **a** Find the HCF of 34 and 58.
b Find the LCM of 34 and 58.

19 Show that the HCF of 63 and 110 is 1.

20 37 and 47 are prime numbers.
a What is the HCF of 37 and 47?
b What is the LCM of 37 and 47?
c Write a rule for finding the HCF and LCM of two prime numbers.
d Compare your answer to part **c** with a partner's answer. Check your rules by finding the HCF and LCM of 39 and 83.

Tip
Use a calculator to help you.

LIVEWORKSHEETS

Continued

c Here is the start of another sequence of multiplications.
$-5 \times 4 =$
$-5 \times 3 =$
$-5 \times 2 =$
Copy the sequence and write six more terms.
Describe any patterns in the sequence.

d In the sequences in **a** and **c**, you have some products of two negative integers.
What can you say about the product of two negative integers?

e Make up a sequence of your own like the ones in **a** and **c**.

f Share your answers to parts **d** and **e** with a partner. Are your partner's sequences correct?

2 Work out these multiplications.

a 5×-2 b -5×2 c -5×-2 d -2×-5

3 Work out these multiplications.

a -6×-4 b -7×-7 c -10×-6 d -8×-11

4 Copy and complete this multiplication table.

×	−5	3	−8
4			
−3		−9	
−6	30		

5 Work out

a $(3+5) \times -4$ b $(-3+-5) \times -6$
c $-4 \times (5-8)$ d $-6 \times (-2--7)$

Tip
Do the calculation in brackets first.

6 Round these numbers to the nearest whole number to estimate the answer.

a 3.9×-6.8 b -11.2×2.95
c $(-6.1)^2$ d $(-4.88)^3$

7 a Put these multiplications into groups based on the answers.

3×-4 -6×-2 12×1
-4×-3 2×-6 -12×-1

b Find one more product to put in each group.

LIVEWORKSHEETS

8 These are multiplication pyramids.

a

	−8	
2	−4	−3

b

−3	5	−1

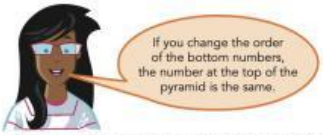
c

−4	−5	−2

Each number is the product of the two numbers below it. For example, in **a**, $2 \times -4 = -8$

Copy and complete the multiplication pyramids.

9 a Draw a multiplication pyramid like those in Question 8, with the integers −2, 3 and −5 in the bottom row, in that order. Complete your pyramid.



b Is Zara correct? Test her idea by changing the order of the numbers in the bottom row of your pyramid.

10 Find the missing numbers in these multiplications.

a $-3 \times \square = -12$ b $-5 \times \square = 45$

c $\square \times -6 = 24$ d $\square \times -10 = 80$

Think like a mathematician

11 A multiplication can be written as a division.
For example, $5 \times 8 = 40$ can be written as $40 \div 8 = 5$ or $40 \div 5 = 8$

a Here is a multiplication: $-4 \times 6 = -24$
Write it as a division in two different ways.

b Write a multiplication of a positive integer and a negative integer.
Then write it as a division in two different ways.

c Here is a multiplication: $-7 \times -2 = 14$
Write it as a division in two different ways.

d Write a multiplication of two negative integers.
Then write it as a division in two different ways.

Tip

A conjecture is a possible value based on what you know.

LIVEWORKSHEETS

Continued

e Can you make a conjecture about the answer when you divide an integer by a negative integer? Test your conjecture.

f Compare your answer with a partner's answers. Have you made the same conjectures?

12 Work out these divisions.

a $18 \div -6$ b $-28 \div -4$ c $30 \div -6$

d $-30 \div -10$ e $42 \div -6$ f $-24 \div -4$

g $60 \div -5$ h $-25 \div -5$

13 Here are three multiplication pyramids.

a



b



c



Copy and complete each pyramid.

Tip

Remember, division is the inverse of multiplication so you will divide as you work down the pyramid.

14 Work out

a $(3 \times -4) \div -2$ b $(2 - 20) \div -3$

c $(-3 + 15) \div -4$ d $24 \div (2 \times -4)$

15 Find the value of x.

a $x \div -4 = 8$ b $x \div -3 = -15$

c $16 \div x = -2$ d $-15 \div x = 3$

16 Round these numbers to the nearest whole number to estimate the answer.

a $-8.75 \div 2.8$ b $18.1 \div -5.9$

c $-28.2 \div -3.8$ d $-35.2 \div -6.9$

17 Round these numbers to the nearest 10 to estimate the answer.

a -48×-29 b -18.1×61.5

c $-71.4 \div -11.8$ d $-99.4 \div 19$

Summary checklist

- ☐ I can multiply two negative integers.
- ☐ I can divide any integer by a negative integer.

LIVEWORKSHEETS