1 Complete these product tables.

a

×	−2	−1	0	1	2
−2			0		
−1			0		
0	0	0	0	0	0
1			0	1	2
2			0		

b

×	−4	−2	0	2	4
−4	16				
−2					
0					0
2					
4				8	

2 Write down the missing number.

a $2 \times (-3) = -6$, so $-6 \div (-3) = \square$

b $2 \times (-3) = -6$, so $-6 \div 2 = \square$

c $-16 \div 4 = -4$, so $\square \times 4 = -16$

d $16 \div (-4) = -4$, so $\square \times (-4) = 16$

3 Complete each sentence by inserting the missing word *positive* or *negative*.

a The product (×) of two positive numbers is _____.

b The product (×) of two negative numbers is _____.

c The product (×) of two numbers with opposite signs is _____.

d The quotient (÷) of two positive numbers is _____.

e The quotient (÷) of two negative numbers is _____.

f The quotient (÷) of two numbers with opposite signs is _____.

4 Calculate the answer to these products.

a $3 \times (-5)$ **b** $1 \times (-10)$ **c** -3×2 **d** -9×6

e $-8 \times (-4)$ **f** $-2 \times (-14)$ **g** $-12 \times (-12)$ **h** -11×9

i -13×3 **j** $7 \times (-12)$ **k** $-19 \times (-2)$ **l** -36×3

m $-6 \times (-11)$ **n** $5 \times (-9)$ **o** $-21 \times (-3)$ **p** $-36 \times (-2)$

5 Calculate the answer to these quotients.

a $14 \div (-7)$ **b** $36 \div (-3)$ **c** $-40 \div 20$ **d** $-100 \div 25$

e $-9 \div (-3)$ **f** $-19 \div (-19)$ **g** $-25 \div 5$ **h** $38 \div (-2)$

i $84 \div (-12)$ **j** $-108 \div 9$ **k** $-136 \div 2$ **l** $-1000 \div (-125)$

m $-132 \div (-11)$ **n** $-39 \div (-3)$ **o** $78 \div (-6)$ **p** $-156 \div (-12)$

6 Work from left to right to find the answer. Check your answer using a calculator.

a $2 \times (-3) \times (-4)$ **b** $-1 \times 5 \times (-3)$ **c** $-10 \div 5 \times 2$

d $-15 \div (-3) \times 1$ **e** $-2 \times 7 \div (-14)$ **f** $100 \div (-20) \times 2$

g $48 \div (-2) \times (-3)$ **h** $-36 \times 2 \div (-4)$ **i** $-125 \div 25 \div (-5)$

j $-8 \div (-8) \div (-1)$ **k** $46 \div (-2) \times (-3) \times (-1)$ **l** $-108 \div (-12) \div (-3)$

7 Write down the missing number in these calculations.

a $5 \times \square = -35$ **b** $\square \times (-2) = -8$ **c** $16 \div \square = -4$

d $-32 \div \square = -4$ **e** $\square \div (-3) = -9$ **f** $\square \div 7 = -20$

g $-5000 \times \square = -10\,000$ **h** $-87 \times \square = 261$ **i** $243 \div \square = -81$

j $50 \div \square = -50$ **k** $-92 \times \square = 184$ **l** $-800 \div \square = -20$

8 Remember that $\frac{9}{3}$ means $9 \div 3$. Use this knowledge to simplify each of the following.

a $\frac{-12}{4}$ **b** $\frac{21}{-7}$ **c** $\frac{-40}{-5}$ **d** $\frac{-124}{-4}$

e $\frac{-15}{-5}$ **f** $\frac{-100}{-20}$ **g** $\frac{-900}{30}$ **h** $\frac{20\,000}{-200}$

9 Given that $3^2 = 3 \times 3 = 9$ and $(-3)^2 = -3 \times (-3) = 9$, simplify each of the following.

a $(-2)^2$ **b** $(-1)^2$ **c** $(-9)^2$ **d** $(-10)^2$

e $(-6)^2$ **f** $(-8)^2$ **g** $(-3)^2$ **h** $(-1.5)^2$

10 List the different pairs of integers that multiply to give these numbers.

a 6 **b** 16 **c** −5 **d** −24

11 Insert a multiplication or division sign between the numbers to make a true statement.

a $2 \square -3 \square -6 = 1$ **b** $-25 \square -5 \square 3 = 15$

c $-36 \square 2 \square -3 = 216$ **d** $-19 \square -19 \square 15 = 15$

12 **a** There are two distinct pairs of numbers whose product is −8 and difference is 6. What are the two numbers?

b The quotient of two numbers is −11 and their difference is 36. What are the two numbers? There are two distinct pairs to find.

13 Given that 2^4 means $2 \times 2 \times 2 \times 2$ and $(-2)^4 = -2 \times -2 \times -2 \times -2$

a Calculate:

i $(-2)^3$ **ii** $(-2)^6$ **iii** $(-3)^3$ **iv** $(-3)^4$

b Which questions from part **a** give positive answers and why?

c Which questions from part **a** give negative answers and why?

14 $a \times b$ is equivalent to ab, and $2 \times (-3)$ is equivalent to $-(2 \times 3)$. Use this information to simplify these expressions.

a $a \times (-b)$ **b** $-a \times b$ **c** $-a \times (-b)$