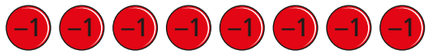
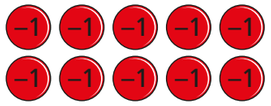
Multiplication and division of directed numbers

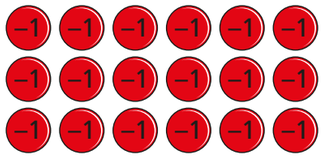
1 Use the diagrams to help you fill in the missing numbers.

a) 

–8 ÷ 2 = [-4] and –8 ÷ 4 = [-2]

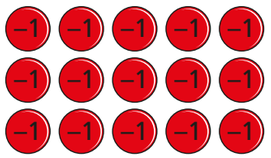
b) 

–10 ÷ 2 = [-5] and –10 ÷ 5 = [-2]

c) 

–18 ÷ 3 = [-6] and –18 ÷ 6 = [-3]

2 Write two multiplications and two divisions represented by this array.



[3] × [-5] = [-15]
[5] × [-3] = [-15]

[-15] ÷ [3] = [-5]
[-15] ÷ [5] = [-3]

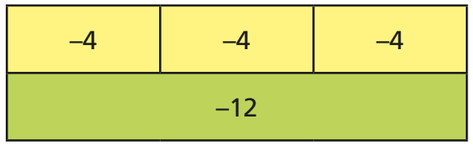
3 Use the bar models to help you complete the calculations.

a) –4 × [3] = [-12]

3 × [-4] = [-12]

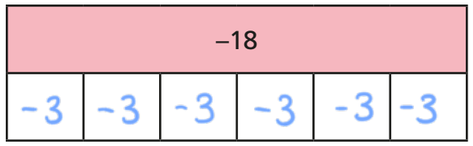
–12 ÷ [3] = [-4]

–12 ÷ [-4] = [3]

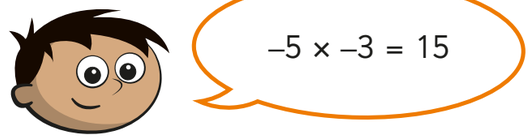


b) [-18] ÷ [6] = [-3]

[-18] ÷ [-3] = [6]



4



Use Amir's multiplication to work out the calculations.

15 ÷ –3 = [-5] 15 ÷ –5 = [-3]

5 Complete the divisions.

–3 ÷ 1 = [-3] –3 ÷ –1 = [3]

–2 ÷ 1 = [-2] –2 ÷ –1 = [2]

–1 ÷ 1 = [-1] –1 ÷ –1 = [1]

0 ÷ 1 = [0] 0 ÷ –1 = [0]

What do you notice?

6 Complete the divisions.

a) $-7 \div -1 =$ 7

b) $-8 \div -1 =$ 8

c) $-8 \div -2 =$ 4

d) $-30 \div -6 =$ 5

7 Work out the calculations.

a) $-3 \times -7 =$ 21

$21 \div -7 =$ -3

$-3 \times 7 =$ -21

$-21 \div -3 =$ 7

b) $-10 \times -13.4 =$ 134

$134 \div -10 =$ -13·4

$-13.4 \times 10 =$ -134

$-134 \div -13.4 =$ 10

8 Work out the value of each calculation and write them in ascending order.

-4×8	$-8 \div -4$	-8×-4	$8 \div -4$
-32	2	32	-2

-4×8, 8÷-4, -8÷-4, -8×-4

9 Fill in the missing numbers.

a) 36 $\div -3 = -12$

b) $12 \div$ -1 $= -12$

c) $-4.5 =$ -9 $\div 2$

d) $60 =$ -360 $\div -6$

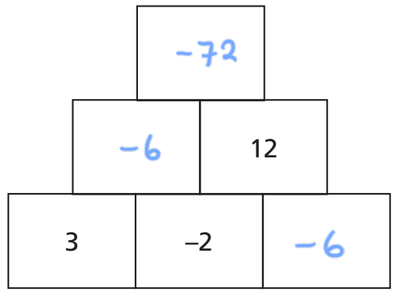
e) $2 = -3 \div$ -1·5

f) e.g. 32 $\div -8 = 24 \div$ -6

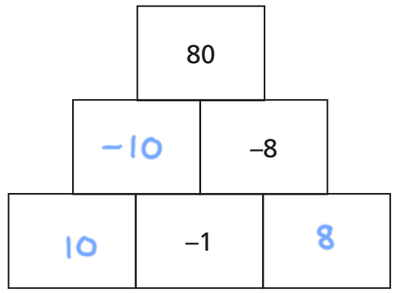
10 In the pyramids, each number is the product of the two numbers below it.

Fill in the missing numbers.

a)



b)



11 Mo has five number cards.

Here is some information about his number cards.

- The cards are in ascending order.
- The range of the number cards is 32
- The greatest number divided by the median number is 8
- The three numbers in the middle have a product of –36

What could Mo's number cards be?

e.g. -8, -2, 3, 6, 24

Compare answers with a partner.

How many different solutions can you find?