



Multiplying and dividing negative numbers

Year 7 About 60 minutes No calculator 52 marks

Date _____

A Do Now

Quick questions to start.

- A1** Needed today [1 mark]

Work out $-5 + 12$.

A2 Needed today [1 mark]

Work out $3 - 11$.

Answer

Answer

- A3** Needed today [1 mark]

Work out $20 - 12 \div 4$.

A4 Needed today [1 mark]

Work out $-4 - 9$.

Answer

Answer

B Example, then your turn

Year 7

Your teacher works through each example with you. Then try the one beside it.

EXAMPLE 1

Work out

- (a) -8×6
- (b) $-54 \div -9$
- (c) $35 \div -7$

Hint Same signs give a positive answer. Different signs give a negative answer.

- B1** Work out [3 marks]

- (a) 9×-7
- (b) $-72 \div -8$
- (c) $-6 \times -4 \div -3$

Answer (a) (b) (c)

EXAMPLE 2

Work out

- (a) $-3 - 20 \div -4$
- (b) $(-6 + 2) \times -7$

Hint Brackets first, then multiply and divide, then add and subtract. In (a) the first minus sign is a subtraction.

- B2** Work out [3 marks]

- (a) $-2 \times 9 + -4 \times -5$
- (b) $-30 \div (-7 + 2)$
- (c) $8 - 18 \div -3$

Answer (a) (b) (c)

EXAMPLE 3

Work out

(a) $(-6)^2$

(b) -6^2

(c) $(-2)^3$

(d) $5 \times (-3)^2$

Hint In $(-6)^2$ the bracket says the whole of -6 is squared. In -6^2 only the 6 is squared.

B3 Work out

[3 marks]

(a) $(-11)^2$

(b) $-3 \times (-4)^2$

(c) $(-1 - 3)^2 \div -8$

Answer (a) (b) (c)

EXAMPLE 4

Find the missing number in each calculation.

(a) $\square \times -6 = 42$

(b) $-56 \div \square = -4$

(c) $\square \div -5 = 9$

Hint Use the inverse operation, then check the sign by putting your number back in.

B4 Find the missing number in each calculation.

[3 marks]

(a) $-8 \times \square = 72$

(b) $\square \div -3 = -11$

(c) $-4 \times \square \div 2 = 18$

Answer (a) (b) (c)

EXAMPLE 5Put one pair of brackets in this statement to make it true. $-2 \times 7 - 10 = 6$

Hint Without brackets the answer is $-14 - 10 = -24$. Try brackets round different pairs of numbers.

B5 Put one pair of brackets in each statement to make it true.

[2 marks]

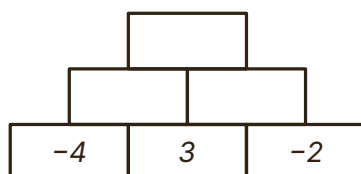
(a) $-12 \div 4 + -2 = -6$

(b) $5 - 3 \times -4 = -8$

C Practice

Year 7

- C1** In this number wall, each brick is the two bricks below it multiplied together. Complete the number wall. [3 marks]



Answer

- C2** The same number goes in each box. Find the number. [2 marks]
- $$\square \times \square \times \square = -343$$

Answer

- C3** Find two whole numbers that multiply to give -24 and add to give 5 . [2 marks]

Answer

- C4** Work out the mean of these numbers. [2 marks]
- $$-7, \quad 3, \quad -12, \quad -4, \quad 5$$

Answer

- C5** Work out $\frac{-6 \times -10}{-4 - 1}$. [2 marks]

Answer

D Exam-style questions

GCSE Foundation

- D1** Work out
- (a) -7×8 [1 mark]

Answer

- (b) $-48 \div -6$ [1 mark]

Answer

- (c) $(-3)^3$ [1 mark]

Answer

Total for D1: 3 marks

D2 Here are four number cards. $\boxed{-8}$ $\boxed{-5}$ $\boxed{2}$ $\boxed{6}$

- (a) Kim takes two of the cards and multiplies the numbers. Work out the largest answer she can get. [2 marks]

Answer

- (b) Work out the smallest answer she can get by multiplying two of the cards. [2 marks]

Answer

- (c) Kim now divides the number on one card by the number on another card. Work out the smallest answer she can get. [2 marks]

Answer

Total for D2: 6 marks

D3 In a quiz there are 20 questions. A correct answer scores 4 points. A wrong answer scores -2 points. A question not answered scores 0 points.

- (a) Ana gets 9 correct, 6 wrong and does not answer 5. Work out Ana's score. [2 marks]

Answer

- (b) Ben answers all 20 questions. His score is -4 . How many questions did Ben get correct? You must show your working. [3 marks]

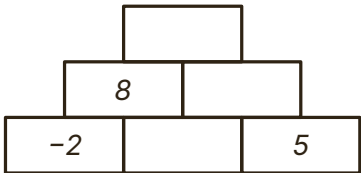
Answer

Total for D3: 5 marks

D4 Jay says, " $-2 \times -3 \times -5 = 30$, because two negatives make a positive." [2 marks]

Jay is wrong. Explain why, and give the correct answer.

D5 In this number wall, each brick is the two bricks below it multiplied together. Work out the number in the top brick. You must show your working. [3 marks]



Answer

E Extension

Stretch

No route is given. The hints are at the end of the sheet. Use one at a time.

E1 This is a multiplication square. Each number inside is the number at the start of its row multiplied by the number at the top of its column. Complete the multiplication square: write the three missing numbers at the top, the three at the start of the rows, then the four missing numbers inside. [4 marks]

×	-3	?	?
?	-18	-30	?
?	?	35	-14
?	27	?	?

Answer

Extension hints

Cover these with paper. Uncover one at a time.

- E1

Hint 1

Start with the column you know: $-3 \times \text{row 1} = -18$.
- Hint 2

Row 1 is 6. Then $6 \times \text{column 2} = -30$, so column 2 is -5 .
- Hint 3

Row 2: $35 \div -5 = -7$; column 3: $-14 \div -7 = 2$; row 3: $27 \div -3 = -9$. Then multiply to fill in the four missing numbers inside.

How did it go?

Colour one circle on each line: not yet, nearly, yes.

- I can multiply and divide with negative numbers.

☐
☐
☐
- I can use the order of operations with negative numbers.

☐
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☐
- I can work out powers of negative numbers and find missing numbers.

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