

GCSE Maths: Inverse operations, cancelling and reciprocals (Higher): answers

GCSE Maths - Number Basics - Higher - Lesson 1.7

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch01-number-basics/higher/inverse-operations-cancelling-and-reciprocals/

Exercise 1H Inverse operations, cancelling and reciprocals Non-calculator

1 Find each missing number.

(a) $? + 7 = 20$

Answer: 13

(b) $? - 8 = 15$

Answer: 23

(c) $35 - ? = 12$

Answer: 23

(d) $6 \times ? = 54$

Answer: 9

(e) $? \div 4 = 9$

Answer: 36

(f) $72 \div ? = 8$

Answer: 9

2 I think of a number. Work out the number in each case.

(a) I multiply it by 3 and subtract 4. The answer is 23.

Answer: 9

(b) I add 8 and then multiply by 2. The answer is 30.

Answer: 7

(c) I divide it by 5 and then add 3. The answer is 11.

Answer: 40

3 Use the inverse operation to decide whether each answer is correct.

(a) $342 \times 15 = 5130$

Answer: Correct

(b) $7524 \div 12 = 627$

Answer: Correct

- (c) $1000 - 468 = 542$
Answer: Incorrect

4 You are given that $23 \times 47 = 1081$. Use this fact to work out each calculation.

- (a) 230×47
Answer: 10 810

- (b) 23×4.7
Answer: 108.1

- (c) 2.3×470
Answer: 1081

- (d) $1081 \div 23$
Answer: 47

- (e) $10\,810 \div 47$
Answer: 230

- (f) $108.1 \div 23$
Answer: 4.7

5 Write down the reciprocal of each number.

- (a) 5
Answer: $\frac{1}{5}$

- (b) $\frac{2}{3}$
Answer: $\frac{3}{2}$

- (c) 0.25
Answer: 4

- (d) 0.4
Answer: $\frac{5}{2} = 2.5$

- (e) $\frac{1}{8}$
Answer: 8

6 Explain why the number 0 does not have a reciprocal.

Answer: Because $1 \div 0$ cannot be worked out

7 Work out each calculation by cancelling first.

- (a) $37 \times 18 \div 18$
Answer: 37

(b) $125 \times 48 \div 8$

Answer: 750

(c) $15 \times 24 \div 6$

Answer: 60

(d) $72 \times 35 \div 9$

Answer: 280

8 A jug holds 6 litres of juice. How many glasses of 0.25 litres can be filled?

Answer: 24 glasses

9 Sam says "Dividing by 0.1 is the same as multiplying by 10." Is Sam correct? Explain.

Answer: Yes

10 Use cancelling to simplify each expression.

(a) $6x \div 6$

Answer: x

(b) $(4a \times 5) \div 5$

Answer: $4a$

(c) $y + 9 - 9$

Answer: y

11 Write down the reciprocal of each number.

(a) $2 \frac{1}{4}$

Answer: $\frac{4}{9}$

(b) 0.125

Answer: 8

(c) 1.6

Answer: $\frac{5}{8} = 0.625$

12 Work out each calculation. Use reciprocals.

(a) $12 \div 0.25$

Answer: 48

(b) $9 \div 0.75$

Answer: 12

(c) $20 \div 0.4$

Answer: 50

13 A rope is 4.5 m long. It is cut into pieces that are each 0.15 m long. How many pieces are there?

Answer: 30 pieces

- 14** Zara says, "The reciprocal of a number is always smaller than the number." Is she correct? Give examples to support your answer.

Answer: No. It is sometimes smaller and sometimes bigger

Exercise 11 Calculator: powers, roots and reciprocals

Calculator allowed

- 1** Use a calculator to work out each value.

(a) $(2.5)^2$

Answer: 6.25

(b) $(1.2)^3$

Answer: 1.728

(c) $\sqrt{20.25}$

Answer: 4.5

(d) $\sqrt[3]{0.027}$

Answer: 0.3

(e) $(0.4)^2 + (0.3)^2$

Answer: 0.25

(f) $\sqrt{((0.6)^2 + (0.8)^2)}$

Answer: 1

- 2** Use the reciprocal key x^{-1} on your calculator to find the reciprocal of each number.

(a) 0.8

Answer: $\frac{5}{4} = 1.25$

(b) 0.5

Answer: 2

(c) 1.25

Answer: $\frac{4}{5} = 0.8$

(d) 0.2

Answer: 5

- 3** Work out $\frac{1}{0.4} + \frac{1}{0.5}$. Show every step.

Answer: 4.5

- 4** A square has sides of length 6.5 cm and a smaller square has sides 3.5 cm. Work out how much bigger the area of the large square is.

Answer: 30 cm^2

- 5** Work out the length of the longest side of a right-angled triangle with shorter sides 5 cm and 12 cm, using $\sqrt{5^2 + 12^2}$.

Answer: 13 cm

- 6** Write down the value of 4^3 + the cube root of 125.

Answer: 69

- 7** Explain why the reciprocal of 0.2 is bigger than the reciprocal of 0.5.

Answer: Because 0.2 is smaller than 0.5