

Calculating with decimals and estimates

About 45 minutes No calculator 44 marks



Hints online, answers free with an account:
mathswariz.uk/worksheets/gcse-calculating-with-decimals-and-estimates/

Date _____

A Do Now

The first question is what today's lesson needs. The others bring back earlier topics.

- A1** Needed today [2 marks] **A2** Key Stage 3 [2 marks]
 Given that $17 \times 18 = 306$, work out 0.17×18 . Work out $(-3)^2 - 7 \times (-6)$.

Answer

Answer

- A3** Key Stage 3 [2 marks] **A4** Key Stage 3 [2 marks]
 Given that $41 \times 40 = 1640$, work out 41×41 . Write $\frac{45}{60}$ in its simplest form.

Answer

Answer

B Example, then your turn

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

EXAMPLE 1Work out 0.56×2.3 .

Hint Work out 56×23 , then count the decimal places in the question.

- B1** Work out 0.43×6.7 . [2 marks]

Answer

EXAMPLE 2Estimate $\frac{29.6 \times 5.12}{0.487}$.

Hint Round each number to 1 significant figure first.

- B2** Estimate $\frac{71.4 \times 3.92}{0.198}$. [3 marks]

Answer

C Practice

- C1** Work out $9.36 \div 0.18$. [2 marks] **C2** Round 0.040738 to 3 significant figures. [1 mark]

Answer

Answer

- C3** You are told that $27 \times 53 = 1431$. [2 marks]
Write down the value of 2.7×0.53 and of $143.1 \div 5.3$.
- C4** Grapes cost £3.40 per kilogram. [2 marks]
Work out the cost of 0.65 kg of grapes.

Answer and

Answer

- C5** 427 students and 38 teachers [2 marks]
go on a trip. Each coach holds 52 people. How many coaches are needed? You must show your working.
- C6** A box holds 46 tiles. Work out [2 marks]
the number of tiles in 378 boxes. You must show your working.

Answer

Answer

- C7** Estimate the value of [2 marks]
 $\sqrt{48.7 \times 2.1}$.
- C8** Max works out 6.12×0.48 and [2 marks]
gets 29.376. Without working out the exact answer, explain why he must be wrong.

Answer

D Exam-style questions

- D1** Tom says, " $4.2 \div 0.6 = 0.7$, because dividing always makes a number smaller." [2 marks]
Explain why Tom is wrong, and give the correct answer.

- D2** Fabric costs £6.80 per metre. Priya buys 2.75 m of fabric and pays with a £20 note. [3 marks]
(a) Work out her change.

Answer

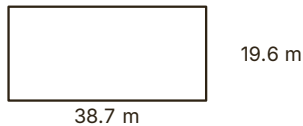
- (b) She cuts the fabric into strips 0.25 m long. How many strips does she get? [2 marks]

Answer

- (c) She makes one bookmark from each strip and sells every bookmark for £1.45. [2 marks]
Does she get back what she paid for the fabric? Show how you decide.

Total for D2: 7 marks

- D3** Lena's garden is a rectangle 38.7 m long and 19.6 m wide. One box of grass seed covers 50 m^2 .



Not drawn accurately

- (a) Estimate the area of the garden. [2 marks]

Answer

- (b) Use your estimate to work out how many boxes of seed she needs. [1 mark]

Answer

- (c) Is your estimate of the area an overestimate or an underestimate? Give a reason. [1 mark]

Total for D3: 4 marks

E Extension

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

- E1** Without a calculator, find the value of $\frac{0.024 \times 0.3}{0.0006 \times 1.2}$. [3 marks]

Answer

Extension hints

Cover these with paper. Uncover one at a time.

- E1** **Hint 1** Write every number as a whole number times a power of 10.
- Hint 2** $0.024 \times 0.3 = 0.0072$ and $0.0006 \times 1.2 = 0.00072$.
- Hint 3** Multiply both by 100 000:
 $0.0072 \div 0.00072 = 720 \div 72 = 10$.

How did it go?

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

I can multiply and divide by a decimal without a calculator. ☐ ☐ ☐

I can round to significant figures and estimate an answer. ☐ ☐ ☐

I can use an estimate to check an answer. ☐ ☐ ☐