

Name _____

Date _____

4.5 Making decimal calculations easier — worksheet

Simplify calculations containing decimals using place value, equivalent fractions and the order of operations. · 56 questions · Show your working.

Remember

- A decimal can be rewritten as a **division**: $0.06 = 6 \div 100$.
- Then reorder the calculation: $0.06 \times 3500 = 6 \times (3500 \div 100) = 6 \times 35 = 210$.
- Multiplication and division may be done in **any order**, so choose the easy order.
- **Partition** a number: $1.5 \times 48 = 48 + 24 = 72$.
- **Round and compensate**: $8.2 \times 9 = 8.2 \times 10 - 8.2 = 73.8$.
- **Double and halve**: $2.5 \times 16 = 5 \times 8 = 40$. The product does not change.
- Learn the common ones: $0.5 = \frac{1}{2}$, $0.25 = \frac{1}{4}$, $0.75 = \frac{3}{4}$, $0.125 = \frac{1}{8}$, $0.1 = \frac{1}{10}$.
- Dividing by a number less than 1 makes the answer **bigger**: $45 \div 0.5 = 90$.

A · Fluency — Use an easier method for each calculation.

- 1 Work out 0.06×3500 using an easier method.

- 2 Work out 8.2×9 using an easier method.

- 3 Work out $12.56 \div 40$ using an easier method.

- 4 Work out 0.4×250 using an easier method.

- 5 Work out 0.25×84 using an easier method.

- 6 Work out 0.5×36 using an easier method.

- 7 Work out 1.5×48 using an easier method.

- 8 Work out 0.05×600 using an easier method.

- 9 Work out 2.5×16 using an easier method.

- 10 Work out 0.75×40 using an easier method.

- 11 Work out 0.02×4500 using an easier method.

12 Work out 0.1×870 using an easier method.

13 Work out $8.2 \times (10 - 1)$

14 Work out $7.4 \times (10 - 1)$

15 Work out $6.5 \times (10 - 2)$

16 Work out $4.8 \times (20 - 1)$

17 Work out $9.6 \times (10 - 1)$

18 Work out $3.7 \times (100 - 1)$

19 Work out $12.5 \times (8 + 2)$

20 Work out $2.4 \times (5 + 5)$

21 Work out $1.8 \times (10 + 1)$

22 Work out $5.2 \times (20 - 2)$

23 Work out $0.9 \times (40 + 10)$

24 Work out $6.25 \times (4 \times 4)$

B · Reasoning — Why each shortcut works.

25 $0.06 = 6 \div 100$. Use that to work out 0.06×3500 .

26 Use the fact that $8.2 \times 9 = 8.2 \times (10 - 1)$ to work it out.

27 $12.56 \div 40 = 12.56 \div 4 \div 10$. Work it out.

28 Which is the easiest way to work out 0.25×84 ?

- ☐ Long multiplication
- ☐ Quarter of 84
- ☐ $84 \div 0.25$
- ☐ 84×4

29 Which is the easiest way to work out 0.5×36 ?

- ☐ Half of 36
- ☐ Double 36
- ☐ $36 \div 0.5$
- ☐ Long multiplication

- 30** Work out 0.75×40 by thinking of 0.75 as three quarters.

- 31** Work out 2.5×16 by doubling and halving.

- 32** Work out 1.5×48 by partitioning 1.5 into $1 + 0.5$.

- 33** Why does doubling one number and halving the other leave the product unchanged?
☐ It does not
☐ Because $\times 2$ and $\div 2$ cancel out
☐ Because the numbers are decimals
☐ Because the answer is even
- 34** Work out 0.02×4500 by writing 0.02 as $2 \div 100$.

- 35** Work out 0.1×870 .

- 36** Is multiplying by 0.5 the same as dividing by 2?
☐ Yes
☐ No

C · Challenge — Combining the methods.

- 37** Work out $0.06 \times 3500 \div 7$.

- 38** Work out 8.2×99 .

- 39** Work out 3.7×101 .

- 40** Work out 6.25×16 by doubling and halving twice.

- 41** Work out 0.125×64 by thinking of 0.125 as one eighth.

- 42** Work out $45 \div 0.5$.

- 43** Work out $12 \div 0.25$.

- 44** Work out $2.5 \times 3.6 \times 4$.

D · Word problems — Shortcuts in real calculations.

- 45** A shop sells 3500 pencils at \$0.06 each. What is the total, in dollars?

- 46** A tank of 12.56 litres is shared into 40 equal cups. How much in each cup, in litres?

- 47** A worker earns \$8.20 an hour and works 9 hours. How much is earned, in dollars?

- 48** A quarter of a 84 kg load is removed. How many kg is that?

- 49** A recipe uses 0.5 kg of flour per cake. How much for 36 cakes, in kg?

- 50** A pipe costs \$1.50 per metre. How much for 48 m, in dollars?

- 51** A machine uses 0.05 litres per minute. How much in 600 minutes, in litres?

- 52** A box weighs 2.5 kg. What is the mass of 16 boxes, in kg?

- 53** A field of 40 hectares has three quarters planted. How many hectares is that?

- 54** A shop sells 4500 stickers at \$0.02 each. What are the takings, in dollars?

- 55** A rope 870 cm long is cut to one tenth of its length. How long is the piece, in cm?

- 56** A drink costs \$2.40. A group buys 10. How much do they pay, in dollars?

