

Multi-Digit and Decimal Operations: practice solutions, Grade 6 – download the PDF

Written solutions to the chapter problems. Check each step, then correct yourself.

1 Multiplying whole numbers



(a) $52 \times 6 = 312$ and $52 \times 30 = 1,560$; $312 + 1,560 = 1,872$.

(b) $407 \times 3 = 1,221$ and $407 \times 20 = 8,140$; $1,221 + 8,140 = 9,361$.

Answers: 1,872 and 9,361.

2 Exact long division



(a) 12 goes into 93 seven times (84), remainder 9; bring down 6: $96 = 12 \times 8$. The answer is 78.

(b) 25 goes into 127 five times (125), remainder 2; bring down 5: $25 = 25 \times 1$. The answer is 51.

(c) 42 goes into 201 four times (168), remainder 33; bring down 6: $336 = 42 \times 8$. The answer is 48.

3 Adding decimals



- (a) $6.45 + 3.80 = 10.25$.
- (b) $12.07 + 0.93 = 13.00 = 13$.
- (c) $0.506 + 2.740 = 3.246$.

4 Subtracting decimals

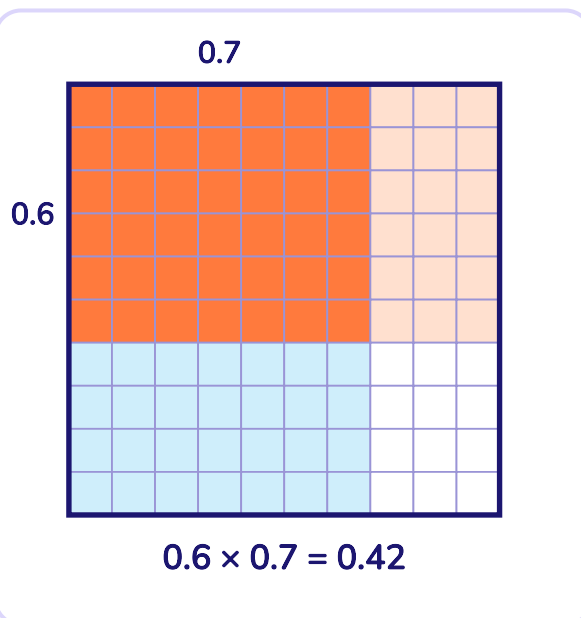


- (a) $9.50 - 4.27 = 5.23$.
- (b) $15.00 - 6.08 = 8.92$.
- (c) $3.004 - 1.750 = 1.254$.

5 Products with decimals



- (a) $6 \times 7 = 42$ with 2 decimal places: **0.42**. The grid below shows 42 of 100 squares shaded in orange.



- (b) $4 \times 35 = 140$ with 2 decimal places: **1.40 = 1.4**.
- (c) $15 \times 2 = 30$ with 2 decimal places: **0.30 = 0.3**.

6 Dividing decimals by whole numbers



- (a) $84 \div 4 = 21$, so $8.4 \div 4 = 2.1$.
- (b) $36 \div 6 = 6$ hundredths, so $0.36 \div 6 = 0.06$.
- (c) $75 \div 5 = 15$, so $7.5 \div 5 = 1.5$.

7 Quick estimate of a sum



Estimate: $5 + 8 + 3 = 16$.

Exact: $4.90 + 8.10 + 2.95 = 15.95$, which is very close to 16.

8 Long division with a remainder



23 goes into 48 twice (46), remainder 2; bring down 1: 21, which is less than 23, so write 0; bring down 7: 217 and $23 \times 9 = 207$, remainder 10.

The quotient is 209 and the remainder is 10.

Check: $23 \times 209 = 4,807$ and $4,807 + 10 = 4,817$.

9 Seats in a theater



$$38 \times 46 = 38 \times 40 + 38 \times 6 = 1,520 + 228 = 1,748.$$

The theater has 1,748 seats.

10 Products of two decimals



- (a) $34 \times 26 = 884$, 2 decimal places: **8.84**.
- (b) $75 \times 12 = 900$, 3 decimal places: **0.900 = 0.9**.
- (c) $508 \times 4 = 2,032$, 3 decimal places: **2.032**.

11 Dividing by a decimal



- (a) Move one place: $63 \div 9 = 7$.
- (b) Move two places: $456 \div 12 = 38$.
- (c) Move one place: $17 \div 5 = 3.4$.

12 True or false?



- (a) False. Dividing by 0.1 is the same as multiplying by 10, so $9.8 \div 0.1 = 98$.
- (b) True. $4 \times 5 = 20$ with 2 decimal places gives $0.20 = 0.2$.
- (c) True. $7.20 + 0.35 = 7.55$.
- (d) False. Multiplying by 0.1 gives one tenth of the number, so it gets smaller (for any positive number).

13 Trading card shopping



Cards: $3 \times 4.75 = 14.25$. Total: $14.25 + 6.30 = 20.55$.

Change: $25 - 20.55 = 4.45$.

Mia gets 4.45 dollars back.

14 Find the error



Estimate: $2 \times 1.5 = 3$, and 2.4 is a bit more than 2, so the product should be a little above 3, not 0.36.

Correct: $24 \times 15 = 360$, with 2 decimal places: $3.60 = 3.6$. The student put too many decimal places in the answer.

15 Dividing with decimals in the quotient



(a) $147 \div 6 = 24.5$.

(b) $520 \div 8 = 65$.

(c) $3.000 \div 8 = 0.375$.

16 Bakery flour



Flour needed: $18 \times 0.35 = 6.30$ kg.

Bags: $6.3 \div 2.5 = 2.52$. She cannot buy part of a bag, so she rounds up.

She must buy 3 bags.

17 Training for a race



Monday to Saturday: $6 \times 1.35 = 8.10$ miles. Add Sunday: $8.10 + 2.80 = 10.90$ miles.

Remaining: $12 - 10.9 = 1.1$.

Omar needs 1.1 more miles.

18 Best unit price



12-pack: $8.40 \div 12 = 0.70$ dollars per can.

18-pack: $12.06 \div 18 = 0.67$ dollars per can.

The 18-can pack is cheaper per can (0.67 dollars versus 0.70 dollars).

19 Estimate, then compute



Estimate: $40 \times 5 = 200$.

Exact: $38.7 \times 5 = 193.5$ and $38.7 \times 0.12 = 4.644$, so the product is $193.5 + 4.644 = 198.144$.

The estimate 200 is very close to 198.144.

20 School fundraiser



Boxes: $126 \times 14 = 1,764$.

Money collected: $1,764 \times 3.25 = 5,733$ dollars.

Cost: $1,764 \times 1.80 = 3,175.20$ dollars.

Profit: $5,733 - 3,175.20 = 2,557.80$ dollars.

21 Mystery numbers



(a) Undo the multiplication: $6.5 \div 0.25 = 26$.

(b) Undo the division: $12.5 \times 0.4 = 5$.

(c) Undo the addition: $5.1 - 2.35 = 2.75$.

Check (a): $26 \times 0.25 = 6.5$. Check (c): $2.75 + 2.35 = 5.10$.



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