



Ratio & rate reasoning

GRADE 6 MATH

Answer keys for the exit ticket, practice worksheet, and homework, plus notes for the lesson slides. Each answer shows the steps and the most likely wrong answer (“If wrong”), so you can tell what a mistake means, not just that it is one. Questions go from **fluency** to **application** to **reasoning**.

Exit Ticket — answer key

Use: End of the ratio-&-rate reasoning lesson. 5–8 min, independent. One skill — solving problems with ratio and rate reasoning.

Timing: 5–8 min · independent. Item 4 compares rates — watch for total-vs-rate confusion, the core misconception here.

1. 2 tickets \$10 — cost of 5 tickets? **FLUENCY**

Answer: **\$25**

1. Per ticket: $\$10 \div 2 = \$5$.

2. 5 tickets: $\$5 \times 5 = \$25$.

If wrong: Scaled only the number of tickets, or added \$10 again per ticket.

2. 3 gallons → 90 miles — how far on 8 gallons? **APPLICATION**

Answer: **240 miles**

1. Unit rate: $90 \div 3 = 30$ miles per gallon.

2. 8 gallons: $30 \times 8 = 240$ miles.

If wrong: Divided the wrong way ($3 \div 90$), or added 90 for each extra gallon.

3. Recipe for 4 people uses 6 cups — cups for 10 people? **APPLICATION**

Answer: **15 cups**

1. Per person: $6 \div 4 = 1.5$ cups.

2. 10 people: $1.5 \times 10 = 15$ cups.

If wrong: Added 6 for each extra person, or scaled by 2 ($4 \rightarrow 8$) and stopped.

4. A: 12 trees / 3 h. B: 18 trees / 6 h — who is faster? REASONING

Answer: **Class A (4 trees/hr vs 3 trees/hr)**

1. A: $12 \div 3 = 4$ trees per hour.
2. B: $18 \div 6 = 3$ trees per hour.
3. $4 > 3$, so Class A is faster.

If wrong: Chose B because it planted more trees in total — compared totals, not the per-hour rate.

Quick answers for fast checking:

#	Level	Answer
1	fluency	\$25
2	application	240 miles
3	application	15 cups
4	reasoning	Class A

Practice Worksheet — answer key

Use: During the lesson after the mini-lesson/deck. The ramp (compute → apply → compare) shows exactly where reasoning breaks.

Timing: 15–25 min · pairs or independent · circulate on items 7–9 (reasoning). Items 1–3 fluency, 4–6 application, 7–9 reasoning. Items 7 & 9 target compare-the-rate reasoning.

1. 3 pens \$6 — cost of 7 pens? FLUENCY

Answer: **\$14**

1. Per pen: $6 \div 3 = \$2$.
2. 7 pens: $2 \times 7 = \$14$.

If wrong: Added \$6 per pen, or scaled the pens only.

2. 5 pages / 2 min — pages in 10 min? FLUENCY

Answer: **25 pages**

1. Per minute: $5 \div 2 = 2.5$ pages.
2. 10 min: $2.5 \times 10 = 25$ pages.

If wrong: Multiplied 5×10 , ignoring the 2 minutes.

3. 4 apples \$2 — cost of 10 apples? **FLUENCY**

Answer: **\$5**

1. Per apple: $2 \div 4 = \$0.50$.
2. 10 apples: $0.50 \times 10 = \$5$.

If wrong: Added \$2 per apple, or divided the wrong way.

4. 6 muffins use 2 cups flour — flour for 15 muffins? **APPLICATION**

Answer: **5 cups**

1. Per muffin: $2 \div 6 = 1/3$ cup.
2. 15 muffins: $1/3 \times 15 = 5$ cups.

If wrong: Scaled 6→15 as if it were $\times 2$, or added flour per muffin.

5. 24 miles in 2 hours — time to ride 60 miles? **APPLICATION**

Answer: **5 hours**

1. Speed: $24 \div 2 = 12$ mph.
2. Time: $60 \div 12 = 5$ hours.

If wrong: Multiplied instead of dividing, or used minutes/miles in the wrong roles.

6. 2 cups blue for 3 walls — cups for 12 walls? **APPLICATION**

Answer: **8 cups**

1. Per wall: $2 \div 3 = 2/3$ cup.
2. 12 walls: $2/3 \times 12 = 8$ cups.

If wrong: Added cups per wall instead of using the ratio, or scaled only the walls.

7. A: 5 lb \$10. B: 8 lb \$12 — better deal per pound? **REASONING**

Answer: **Store B (\$1.50/lb vs \$2.00/lb)**

1. A: $10 \div 5 = \$2.00$ per lb.
2. B: $12 \div 8 = \$1.50$ per lb.
3. $\$1.50 < \$2.00$, so B is the better deal.

If wrong: Chose A for its lower total price, or B for more pounds — compared one number, not the per-pound rate.

8. Double number line 4 h = 20 miles — miles in 7 h? REASONING

Answer: **35 miles**

1. Rate: $20 \div 4 = 5$ miles per hour.
2. 7 hours: $5 \times 7 = 35$ miles.

If wrong: Read the line without finding the per-hour rate, or added 20 for the extra hours.

9. A 3 water:2 juice. B 5 water:3 juice — which is juicier? REASONING

Answer: **A ($2/3 \approx 0.67$ juice per water > B's $3/5 = 0.6$)**

1. A: juice per water = $2 \div 3 \approx 0.67$.
2. B: $3 \div 5 = 0.6$.
3. $0.67 > 0.6$, so A is juicier.

If wrong: Compared just the juice amounts (2 vs 3) without relating them to the water — didn't use a rate.

Quick answers for fast checking:

#	Level	Answer
1	fluency	\$14
2	fluency	25 pages
3	fluency	\$5
4	application	5 cups
5	application	5 hours
6	application	8 cups
7	reasoning	Store B
8	reasoning	35 miles
9	reasoning	A juicier

Homework — answer key

Use: Parallels the practice sheet one-to-one, reinforcing without re-teaching. The on-sheet worked example makes it independent.

Timing: ~15 min at home · independent · review item 8 (rate comparison) as the next-day warm-up.

1. 4 markers \$8 — cost of 9 markers? FLUENCY

Answer: **\$18**

1. Per marker: $8 \div 4 = \$2$.

2. 9 markers: $2 \times 9 = \$18$.

If wrong: Added \$8 per marker, or scaled the markers only.

2. 3 L in 4 min — liters in 12 min? FLUENCY

Answer: **9 liters**

1. Per minute: $3 \div 4 = 0.75$ L.

2. 12 min: $0.75 \times 12 = 9$ L.

If wrong: Multiplied 3×12 , ignoring the 4 minutes.

3. 5 stickers \$2.50 — cost of 8 stickers? FLUENCY

Answer: **\$4**

1. Per sticker: $2.50 \div 5 = \$0.50$.

2. 8 stickers: $0.50 \times 8 = \$4$.

If wrong: Added \$2.50 per sticker, or divided the wrong way.

4. 8 cookies use 3 cups flour — flour for 20 cookies? APPLICATION

Answer: **7.5 cups**

1. Per cookie: $3 \div 8 = 0.375$ cup.

2. 20 cookies: $0.375 \times 20 = 7.5$ cups.

If wrong: Scaled $8 \rightarrow 20$ as a whole factor, or added flour per cookie.

5. 15 km in 3 h — distance in 5 h? APPLICATION

Answer: **25 km**

1. Speed: $15 \div 3 = 5$ km/h.

2. 5 hours: $5 \times 5 = 25$ km.

If wrong: Added 15 for each extra hour, or used the wrong rate.

6. 4 scoops for 6 plants — scoops for 15 plants? APPLICATION

Answer: **10 scoops**

1. Per plant: $4 \div 6 = 2/3$ scoop.
2. 15 plants: $2/3 \times 15 = 10$ scoops.

If wrong: Scaled 6→15 incorrectly, or added scoops per plant.

7. A: 6 cans \$9. B: 10 cans \$14 — better buy per can? REASONING

Answer: **Store B (\$1.40/can vs \$1.50/can)**

1. A: $9 \div 6 = \$1.50$ per can.
2. B: $14 \div 10 = \$1.40$ per can.
3. $\$1.40 < \$1.50$, so B is the better buy.

If wrong: Chose A for its lower total, or B for more cans — didn't compare per-can rates.

8. Mix A 4 water:1 syrup. Mix B 6 water:2 syrup — sweeter? REASONING

Answer: **Mix B ($2/6 \approx 0.33$ syrup per water $>$ A's $1/4 = 0.25$)**

1. A: syrup per water = $1 \div 4 = 0.25$.
2. B: $2 \div 6 \approx 0.33$.
3. $0.33 > 0.25$, so B is sweeter.

If wrong: Compared just the syrup amounts (1 vs 2) without relating them to the water — didn't use a rate.

Quick answers for fast checking:

#	Level	Answer
1	fluency	\$18
2	fluency	9 liters
3	fluency	\$4
4	application	7.5 cups
5	application	25 km
6	application	10 scoops
7	reasoning	Store B
8	reasoning	Mix B

Lesson slides — teaching notes & timing

Mini-lesson deck: ~12–15 min, then launch into the practice sheet. Slide numbers match the deck.

Slide	~Time	Note
1/8	0:00	Frame the single skill: solve problems by reasoning with ratios and rates. Keep it short.
2/8	1:00	Hook — don't resolve yet. Let pairs propose approaches (table, per-person, scaling). Surface that $4 \rightarrow 10$ isn't a whole-number scale, so unit rate is cleanest.
3/8	3:00	Name the three tools; all are the same underlying idea. Students may pick any that fits.
4/8	5:00	WE1 — model the unit-rate route: $6 \div 4 = 1.5$ per person, then $\times 10$.
5/8	7:00	WE2 — the key move: compare the RATE. Compute trees/hour for each. This is the #1 misconception (comparing totals).
6/8	9:00	CFU — all-student response. Answer 240 miles. Watch for divide-wrong-way.
7/8	11:00	Name the misconception directly: a bigger total isn't automatically better/faster. Find the per-one rate, then compare.
8/8	13:00	Launch the in-class practice sheet.