GMAT QUANTITATIVE REASONING

Arithmetic, Algebra & Word Problems, Mastered



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Factor out common terms. 47 x 32 + 47 x 68 = 47(32 + 68) = 47 x 100 = 4700. Factoring first converts two multiplications and an addition into one multiplication.

Use the answer choices. If choices are 12, 15, 18, 22, 30 and your estimate is ~17, you may not need to compute precisely - but verify before committing, because "close" choices (15 vs 18) demand real computation.

Break division into steps. 1008/14: 1008/7 = 144, then /2 = 72. Dividing by 14 = dividing by 7, then by 2. Similarly, /15 = /3 then /5; /25 = /100 then x4.

Memorize the friendly products. 12 x 12 = 144, 13 x 13 = 169, 14 x 14 = 196, 15 x 15 = 225, 16 x 16 = 256, 25 x 4 = 100, 25 x 8 = 200, 125 x 8 = 1000. These appear as building blocks constantly.

What a Good Pace Feels Like

Twenty-one questions in 45 minutes averages about 2 minutes 9 seconds per question. In practice, aim for this rhythm:

- **Questions 1-7:** settle in. About 2 minutes each. Read carefully; early nerves cause misreads.
- **Questions 8-14:** your groove. Easy questions in 60-90 seconds, mediums in 2 minutes. Bank time here.
- **Questions 15-21:** manage the clock. If you are on pace, work normally. If behind, triage: 90 seconds max per question, eliminate and guess.

Check the clock after question 7 (at least 30 minutes should remain) and after question 14 (at least 15 minutes should remain). If you are more than one question behind at either checkpoint, speed up immediately.

The Mindset

Quantitative Reasoning does not test advanced mathematics. It tests whether you can do middle-school and early-high-school math accurately, quickly, and under pressure - and whether you can translate plain English into equations. Many points are lost to misreading, arithmetic slips, and trap answers rather than to exotic content. The test-taker who translates carefully, shows every step, and sanity-checks each answer has a real edge over the "math person" who does it all in their head and makes three sign errors. In this section, method matters as much as talent.

Comparing fractions. Cross-multiply: is 5/8 or 7/11 larger? 5 x 11 = 55; 7 x 8 = 56. Since 56 > 55, 7/11 is larger. This is faster than finding common denominators.

Repeating decimals. Know the common ones: 1/3 = 0.333..., 2/3 = 0.666..., 1/6 = 0.1666..., 1/9 = 0.111..., 1/11 = 0.0909.... To convert a repeating decimal to a fraction: for 0.2727..., let x = 0.2727..., then 100x = 27.2727..., subtract: 99x = 27, x = 27/99 = 3/11.

Worked example: A recipe uses 2/3 cup of sugar per batch. How many batches can be made with 8 cups of sugar? 8 / (2/3) = 8 x (3/2) = 12. Answer: 12 batches. (Dividing by a fraction: flip and multiply.)

Fraction-Decimal-Percent Conversions

These conversions should be instant. Drill them until they are:

Fraction	Decimal	Percent
1/2	0.5	50%
1/3	0.333...	33.3%
2/3	0.666...	66.7%
1/4	0.25	25%
3/4	0.75	75%
1/5	0.2	20%
2/5	0.4	40%
3/5	0.6	60%
4/5	0.8	80%
1/6	0.1666...	16.7%
5/6	0.8333...	83.3%
1/8	0.125	12.5%
3/8	0.375	37.5%
5/8	0.625	62.5%
7/8	0.875	87.5%
1/10	0.1	10%
1/20	0.05	5%

Worked example: What is 37.5% of 96? Recognize 37.5% = 3/8. 96 x 3/8 = 36. Answer: 36. Converting the percent to a fraction made this a one-step multiplication instead of decimal arithmetic.

(B) 1/3

(C) 3/5

(D) 3

(E) 5

Answer Explanations

1. (A) 5. 7x - 5 = 3x + 15. Subtract 3x: 4x - 5 = 15. Add 5: 4x = 20. x = 5. Backsolving check: test (C) 6: 42 - 5 = 37 vs 18 + 15 = 33. Too big on the left, so try smaller: (A) 5 works.

2. (E) 36. 15% of 240 = 0.15 x 240 = 36. Mental math: 10% is 24, 5% is 12, sum is 36.

3. (B) 40. Total parts = 5 + 3 = 8. Each part = 64/8 = 8. Larger share = 5 x 8 = 40. Trap: (A) 24 is the smaller share.

4. (C) 16. Combine exponents: $2^{5+3-4} = 2^4 = 16$. The other choices are exponent slips: (A) $8 = 2^3$, (B) $32 = 2^5$, (D) $64 = 2^6$, (E) $128 = 2^7$. Forgetting to divide at all would give $2^8 = 256$, and adding all three exponents would give 2^{12}; neither is offered, so if your answer is not a choice, recheck the exponent arithmetic.

5. (A) 7. Factor: (x - 3)(x - 4) = 0, so x = 3 or x = 4. Sum = 7. Shortcut: for $x^2 + bx + c = 0$, the sum of roots is -b = 7.

6. (C) 36 mph. Total distance = 180 miles. Time at 30 mph: 90/30 = 3 hours. Time at 45 mph: 90/45 = 2 hours. Total time = 5 hours. Average = 180/5 = 36 mph. The trap (D) 37.5 is the simple average of the two speeds - wrong, because more time was spent at the slower speed. Always use total distance over total time.

7. (A) -20. Split: x - 4 = 6 gives x = 10; x - 4 = -6 gives x = -2. Product: 10 x (-2) = -20.

8. (E) 4.8. Combined rate = 1/8 + 1/12 = 3/24 + 2/24 = 5/24 per hour. Time = 24/5 = 4.8 hours. Sanity check: together must take less than A's 8 hours alone, but more than 4 hours (two machines as fast as A would need 4 hours). That rules out (A) 4; the computation picks 4.8 over the other survivors.

9. (E) 6. Write n = 7k + 2. Then 3n = 21k + 6 = 7(3k) + 6. Remainder: 6. Shortcut: test n = 2: 3n = 6, remainder 6.

10. (A) 5. Let x = liters of 30% solution. (0.30x + 0.50(15)) / (x + 15) = 0.45. 0.30x + 7.5 = 0.45x + 6.75. 0.75 = 0.15x. x = 5. Check with alligation: distances from 45 are 15 (from 30) and 5 (from 50); ratio = 5:15 = 1:3, so 5L of 30% to 15L of 50%. Confirmed.

11. (B) 8. 3x - 6 + 5 = 2x + 7. 3x - 1 = 2x + 7. x = 8. Check: 3(8-2) + 5 = 23; 2(8) + 7 = 23.