

GRADE 8

MIXED WORD PROBLEMS

Complete Worksheet Pack

6 Practice Worksheets • 6 Answer Keys

Worksheet 1 — Multi-Step Number & Algebra Problems

1. A school buys 18 boxes of pencils. Each box contains 24 pencils. After 137 pencils are distributed, how many remain?
2. A number is multiplied by 4 and then 7 is subtracted. The result is 45. Find the number.
3. Three consecutive integers have a sum of 96. Find the integers.
4. A rectangular garden has length 4 m more than its width. Its perimeter is 52 m. Find its dimensions and area.
5. A shop increases the price of an item by 20% and then gives a 10% discount on the increased price. Is the final price equal to the original price? Show your calculation.
6. A class has 32 students. $\frac{3}{8}$ are in the science club. Of those students, $\frac{2}{3}$ also play a school sport. How many students are in both groups?
7. Challenge: A two-digit number has digits whose sum is 11. Reversing the digits increases the number by 27. Find the number.

Worksheet 2 — Fractions, Percentages & Proportion

1. A tank is $\frac{3}{5}$ full. After 24 litres are added, it is $\frac{9}{10}$ full. Find the capacity.
2. A jacket costs \$80. Its price is reduced by 15%. Find the sale price.
3. A recipe for 6 people uses 450 g of flour. How much is needed for 14 people?
4. A school has 720 students. 35% travel by bus, $\frac{1}{4}$ walk, and the rest use other transport. How many use other transport?
5. A map uses a scale of 1 cm : 8 km. Two towns are 6.5 cm apart. Find the actual distance.
6. A quantity is increased by 25% and becomes 150. Find the original quantity.
7. Challenge: A price is reduced by 20% and then increased by 20%. Explain why the final price is not the original price.

Worksheet 3 — Geometry, Measurement & Volume

1. A rectangular floor is 8.5 m by 6 m. Tiles cover 0.5 square metres each. How many tiles are needed?
2. A cuboid has length 12 cm, width 8 cm and height 5 cm. Find its volume and total surface area.
3. A triangular garden has base 14 m and perpendicular height 9 m. Find its area.
4. A path 1.5 m wide runs around the outside of a 10 m by 7 m rectangular garden. Find the area of the path.
5. A right-angled triangle has legs 9 cm and 12 cm. Find the hypotenuse.
6. A water tank holds 240 litres. It is filled at 12 litres per minute but leaks 2 litres per minute. How long will it take to fill?
7. Challenge: A square and a rectangle have the same area of 144 cm^2 . The rectangle has length 18 cm. Find its width and compare perimeters.

Worksheet 4 — Speed, Time, Money & Real Life

1. A car travels 180 km at 72 km/h, stops for 25 minutes, then travels 120 km at 60 km/h. Find the total elapsed time.
2. A family spends \$240 on accommodation, \$180 on travel and \$150 on food. They have a \$700 budget. What percentage remains?
3. A cyclist travels 24 km at 16 km/h and returns at 12 km/h. Find total time and average speed.
4. A phone costs \$600. A store offers 12% discount, followed by 8% sales tax on the discounted price. Find the final price.
5. A worker earns \$18 per hour for the first 35 hours and \$27 per hour beyond 35. Find pay for 42 hours.
6. A train leaves at 08:35 and arrives at 13:20 after travelling 390 km. Find its average speed.
7. Challenge: Two routes cover 240 km. Route A takes 3 h 45 min; Route B takes 4 h 20 min. Find the difference in average speeds.

Worksheet 5 — Data, Probability & Logical Reasoning

1. Scores are 12, 15, 15, 18, 20, 22 and 48. Find mean, median, mode and range. Which statistic is most affected by 48?
2. A bag contains 5 red, 4 blue and 3 green counters. Two counters are selected with replacement. Find the probability both are red.
3. A survey of 400 students finds 38% prefer football, 27% basketball and the rest another sport. How many chose another sport?
4. A fair die is rolled twice. Find the probability that the sum is greater than 9.
5. A class has mean score 72. If a score of 95 is removed, explain what is likely to happen to the mean.
6. Sales are 120, 150, 135 and 195 units. Find the percentage increase from the first to the last month.
7. Challenge: Create a five-number data set with mean 20, median 18 and range 16.

Worksheet 6 — Grade 8 Maths Problem-Solving Challenge

1. A rectangular swimming pool is 25 m by 12 m. A 2 m wide walkway surrounds it. Find the area of the walkway.
2. A store buys an item for \$240, marks it up by 35%, then offers a 10% discount. Find the selling price and profit percentage.
3. A train travels 210 km at 70 km/h and 150 km at 60 km/h. It stops for 20 minutes between journeys. Find overall average speed including the stop.
4. A number is increased by 30% and then decreased by 30%. If the final value is 136.5, find the original.
5. A class of 40 has mean 68. One score is corrected from 52 to 72. Find the new mean.
6. Cards are numbered 1 to 30. Find the probability of selecting a multiple of 3 or 5.
7. Challenge: Create your own real-life problem that requires at least three different Grade 8 maths topics, then solve it.

Answer Key 1 — Multi-Step Number & Algebra Problems

1. 295 pencils.
2. 13.
3. 31, 32, 33.
4. Width 11 m, length 15 m; area 165 m².
5. Final price is 108% of original, so it is 8% higher.
6. 8 students.
7. 47; reversed number 74.

Answer Key 2 — Fractions, Percentages & Proportion

1. 80 litres.
2. \$68.
3. 1,050 g.
4. 288 students.
5. 52 km.
6. 120.
7. Final price = $0.8 \times 1.2 = 0.96$ of original, so it is 4% lower.

Answer Key 3 — Geometry, Measurement & Volume

1. 102 tiles.
2. Volume 480 cm^3 ; surface area 392 cm^2 .
3. 63 m^2 .
4. Outer dimensions $13 \text{ m} \times 10 \text{ m}$; path area 60 m^2 .
5. 15 cm.
6. Net rate 10 L/min; 24 minutes.
7. Rectangle width 8 cm, perimeter 52 cm; square perimeter 48 cm.

Answer Key 4 — Speed, Time, Money & Real Life

1. 4 h 55 min.
2. \$130 remains; 18.57% remains.
3. Total 3.5 h; average speed ≈ 13.71 km/h.
4. \$570.24.
5. \$819.
6. 4 h 45 min; average speed ≈ 82.1 km/h.
7. Route A = 64 km/h; Route B ≈ 55.38 km/h; difference ≈ 8.62 km/h.

Answer Key 5 — Data, Probability & Logical Reasoning

1. Mean ≈ 21.43 ; median 18; mode 15; range 36. Mean is most affected.
2. $25/144$.
3. 140 students.
4. $1/6$.
5. The mean decreases because 95 is above the original mean.
6. 62.5%.
7. Example: 12, 18, 18, 24, 28.

Answer Key 6 — Grade 8 Maths Problem-Solving Challenge

1. Outer dimensions $29\text{ m} \times 16\text{ m}$; walkway area 164 m^2 .
2. Selling price \$291.60; profit \$51.60; profit percentage 21.5%.
3. Total time = 5 h 50 min; total distance = 360 km; average speed $\approx 61.7\text{ km/h}$.
4. 150.
5. New mean = 68.5.
6. 14 favourable outcomes out of 30; probability $7/15$.
7. Answers vary; the solution should clearly use at least three Grade 8 topics.