



Test Papers
Hub.

ACT Practice Paper 1

Mathematics

45 questions · 4 options each (A–D, F–J) · 50 minutes · Calculator allowed

How to use this booklet

- There are 45 questions in this paper. Each question has four answer choices. Odd-numbered questions use A, B, C, D and even-numbered questions use F, G, H, J.
- Solve each problem, choose the best answer, and mark it. There is no penalty for guessing, so answer every question.
- A calculator is allowed, but every problem can be solved without a complex calculation. Do not spend too long on any one problem: you have about one minute each.

MATHEMATICS — 45 QUESTIONS

Multiple choice · 50 minutes

Questions generally get harder as the test goes on. Work in order, skip anything that stalls you, and come back if time allows. Unless stated otherwise, all figures are in the standard (x, y) coordinate plane and numbers are real.

1. A right triangle has a hypotenuse of 17 inches and one leg of 8 inches. How long is the other leg, in inches?

- A 25
- B 9
- C 16
- D 15

2. A jacket originally priced at \$60 is discounted by 10%. The sale price is then discounted by a further 50%. What is the final price, in dollars?

- F \$24.00
- G \$27.00
- H \$54.00
- J \$4.00

3. What is the sum of the interior angles of a convex polygon with 10 sides, in degrees?

- A 1620
- B 1800
- C 360
- D 1440

4. A prize of \$49 is divided between two people in the ratio 3 : 4. What is the larger share, in dollars?

- F 21
- G 24
- H 7
- J 28

5. What value of x satisfies $9x - 8 = 4x + 5$?

- A $\frac{18}{5}$
- B 1
- C $\frac{13}{5}$
- D $-\frac{13}{5}$

6. If $f(x) = 3x^2 - x + 3$, what is $f(4)$?

- F 41
- G -49
- H 47
- J 143

7. The mean of 8 numbers is 12. Of these, 7 numbers are 14, 18, 6, 12, 6, 15, 12. What is the remaining number?

- A 11
- B 12
- C 21
- D 13

8. A trapezoid has parallel sides of length 14 cm and 23 cm, and a height of 12 cm. What is its area, in square centimeters?

- F 191
- G 222
- H 234
- J 444

9. A taxi company charges a flat fee of \$4 plus \$2 for each mile traveled. A passenger paid \$16. How many miles did the passenger travel?

- A 8
- B 6
- C 12
- D 10

MATHEMATICS — 45 QUESTIONS

Answers & worked solutions

Answer Key

1	D	2	G	3	D	4	J	5	C	6	H
7	D	8	G	9	B	10	F	11	D	12	G
13	B	14	J	15	A	16	F	17	C	18	G
19	B	20	G	21	B	22	F	23	C	24	H
25	A	26	H	27	B	28	F	29	A	30	F
31	A	32	J	33	D	34	F	35	C	36	J
37	B	38	J	39	A	40	G	41	A	42	H
43	C	44	H	45	C						

1. A right triangle has a hypotenuse of 17 inches and one leg of 8 inches. How long is the other leg, in inches? [Pythagorean theorem]

Correct answer: D — 15

- The longest side is the hypotenuse, 17. Use $\text{leg}^2 + \text{leg}^2 = \text{hypotenuse}^2$.
- $8^2 + (\text{other leg})^2 = 17^2$, so $(\text{other leg})^2 = 289 - 64 = 225$.
- Other leg = $\sqrt{225} = 15$ inches.
- Why the other options are wrong:
- A (25): That adds the sides.
- B (9): You cannot just subtract the sides; use squares.
- C (16): This looks tempting but it does not match the working above. It comes from a small arithmetic or reading slip: redo each step and compare.

LOS: Geometry

KEY TAKEAWAY

Right triangle: $a^2 + b^2 = c^2$, where c is the longest side; add the squares to find the hypotenuse, subtract to find a leg.

2. A jacket originally priced at \$60 is discounted by 10%. The sale price is then discounted by a further 50%. What is the final price, in dollars? [Percent]

Correct answer: G — \$27.00

- First discount: 10% off means paying 90%, so the price is $60 \times 0.90 = \$54.00$.
- Second discount is 50% off the NEW price: multiply by 0.50.
- $\$54.00 \times 0.50 = \$27.00$.
- Why the other options are wrong: