

PSAT Math Practice Worksheet

Fifty questions across Algebra, Advanced Math, Problem-Solving and Data Analysis, and Geometry and Trigonometry — the four Digital PSAT/NMSQT Math domains.

QUESTIONS	50	MULTIPLE CHOICE	8	WRITTEN	42
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Instructions

A calculator is allowed throughout. Choose the fastest valid method for each question.

1

Solve: $3x + 7 = 22$.

2

Solve: $5x - 4 = 2x + 11$.

3

A line has slope -2 and y-intercept 5. Which equation represents it?

- A) $y = -2x + 5$
- B) $y = 5x - 2$
- C) $y = 2x + 5$
- D) $y = -2x - 5$

4

Solve the system: $y = x + 3$ and $y = 2x - 1$.

5

Solve: $-3x > 12$.

- A) $x > -4$
- B) $x < -4$
- C) $x > 4$
- D) $x < 4$

6

A gym charges \$15 plus \$5 per class. Write the cost model C for n classes.

7

Using the model above, find the cost of 8 classes.

8

Factor: $x^2 - 7x + 12$.

9

Solve: $x^2 - 4x - 5 = 0$.

10

Simplify: $(x^3)(x^5)$.

- 11** Simplify: $(2x^2)^3$.

- 12** If $f(x) = 2x^2 - 3$, find $f(4)$.

- 13** If $f(x) = x + 5$ and $g(x) = 2x$, find $f(g(3))$.

- A) 8
B) 11
C) 16
D) 6

- 14** A \$60 jacket is discounted 25%. Find the sale price.

- 15** A price rises from \$80 to \$100. Find the percent increase.

- 16** Solve the proportion: $4/9 = x/45$.

- 17** Find the unit rate: a car travels 240 miles in 4 hours.

- 18** Find the mean of: 6, 9, 12, 15, 18.

- 19** Find the median of: 5, 8, 12, 20, 25.

- 20** Find the range of: 3, 17, 9, 22, 5.

- 21** A scatterplot shows points closely following an upward line. This shows:

- A) Strong negative correlation
B) Strong positive correlation
C) No correlation
D) Weak positive correlation

- 22** Find the area of a triangle with base 10 and height 7.

- 23** A right triangle has legs 6 and 8. Find the hypotenuse.

- 24** A right triangle has hypotenuse 13 and one leg 5. Find the other leg.

- 25** Find the circumference of a circle with radius 5. (use $\pi \approx 3.14$)

- 26** Find the area of a circle with radius 4. (use $\pi \approx 3.14$)

- 27** In a right triangle, the angle is 30 degrees and the hypotenuse is 10. Find the opposite side. ($\sin 30 = 0.5$)

- 28** Which ratio defines the sine of an angle in a right triangle?

- A) Opposite/Adjacent
- B) Adjacent/Hypotenuse
- C) Opposite/Hypotenuse
- D) Hypotenuse/Opposite

- 29** Solve: $2(x - 3) = 4x + 2$.

- 30** Simplify: $5x + 3 - 2x + 9$.

- 31** A number tripled and increased by 4 equals 25. Find the number.

- 32** Solve: $x/4 + 3 = 10$.

- 33** Which value of x makes $x^2 = 49$ true?

- A) Only 7
- B) Only -7
- C) 7 or -7
- D) No solution

- 34** A rectangle has length twice its width, and its perimeter is 30. Find the width.

- 35** Simplify: $(3x - 2)(x + 4)$.

- 36** A data set's mean increases after adding a new value. What must be true about the new value?

- A) It equals the old mean
- B) It is greater than the old mean
- C) It is less than the old mean
- D) It is negative

- 37** Solve the system: $2x + y = 10$ and $x - y = 2$.

- 38** Find the slope between (1, 2) and (5, 14).

- 39** A car depreciates 12% per year from \$25,000. Write the exponential model.

40 Which expression is equivalent to x^{-2} ?

- A) x^2
- B) $-x^2$
- C) $1/x^2$
- D) $-1/x^2$

41 A survey of 200 students finds 120 prefer online classes. Find the percent who prefer online classes.

42 A rectangle's area is 48 and its length is 8. Find its width.

43 Solve: $|x - 5| = 3$.

44 A recipe for 4 people uses 3 cups of rice. How many cups are needed for 10 people?

45 Find the value of x if $3^x = 81$.

46 Simplify: $\sqrt[3]{72}$.

47 A student answers a PSAT Math problem incorrectly by dividing when the question required multiplication. Explain how identifying the domain (Algebra, Advanced Math, Data Analysis, Geometry) before starting could have prevented this error.

48 Explain why checking an answer by substituting it back into the original equation is faster and more reliable than re-deriving the entire solution from scratch.

49 Explain why estimating an answer before calculating can help catch an error on a multiple-choice PSAT Math question.

50 Explain the difference between solving an equation and solving an inequality, focusing on when the inequality sign must flip.

Answer key

Direct answers only, in question order. Work the set first, then check.

1. 5	2. 5	3. A) $y = -2x + 5$	4. $x = 4, y = 7$	5. B) $x < -4$
6. $C = 5n + 15$	7. 55	8. $(x-3)(x-4)$	9. $x = 5$ or $x = -1$	10. x^8
11. $8x^6$	12. 29	13. B) 11	14. 45.0	15. 25%
16. 20	17. 60	18. 12	19. 12	20. 19
21. B) Strong positive correlation	22. 35.0	23. 10	24. 12	25. 31.4
26. 50.24	27. 5.0	28. C) Opposite/Hypotenuse	29. -4	30. $3x + 12$
31. 7	32. 28	33. C) 7 or -7	34. 5	35. $3x^2 + 10x - 8$
36. B) It is greater than the old mean	37. $x = 4, y = 2$	38. 3	39. $y = 25000(0.88)^x$	40. C) $1/x^2$
41. 60%	42. 6	43. $x = 8$ or $x = 2$	44. 7.5 cups	45. 4
46. $6\sqrt{2}$	47. Classifying the domain first clarifies what type of relationship is being modeled and what operation the wording implies, so misreading a proportional or rate-based scenario as requiring the opposite operation becomes less likely	48. Substitution only requires evaluating both sides of the original equation with the candidate answer, which is usually a much shorter calculation than repeating the full algebraic derivation, and it directly confirms whether the answer satisfies the original condition	49. A quick estimate narrows the reasonable range for the answer, so if the calculated answer differs wildly from the estimate, it signals a setup or arithmetic mistake before time is wasted double-checking every step	50. Solving an equation isolates the variable using inverse operations without any sign considerations, while solving an inequality follows the same steps except that multiplying or dividing both sides by a negative number reverses the direction of the inequality sign

Error log

Bring this page to your next session so the tutor can start from what actually blocked you.

Questions I answered incorrectly:

Was it the domain classification, the setup, or the arithmetic?

The single topic I want to start the next session with:
