Level 2

Placement Test

Level 2 Placement Test: Scoring and Placement

This test contains 25 questions worth 2 points each, for a total of 50 points. Use your score to decide where to begin:

- 25–50 points (50% or higher): Begin with Level 3.
- Below 25 points: Begin with Level 2.

WHY CAN I MOVE ON WITH 50%?

Each level revisits the same topics with more challenging problems. A score of 50% or higher suggests that you are ready to try the next level; it does not mean you have mastered every Level 2 skill. You do not need to complete every practice problem in order. To make the best use of your time, revisit the topics you feel unsure about or any questions on which you earned zero points.

SCORING GUIDELINES

- Each question is worth 2 points. Use the answer key's partial-credit rules when scoring.
- Questions 1 and 3 each have four entries worth 0.5 point apiece.
- Accept equivalent expressions and roots given in either order.
- For missed questions, use the topic codes and pool group numbers in the answer key to find practice.

25 questions | 50 points | Suggested time: 60 minutes

Show your work. Each numbered question is worth 2 points. Work independently without a calculator.

1 Classify each number as rational or irrational. Write your answers in the table.

$-\frac{7}{12}$	$\sqrt{49}$	$\sqrt{13}$	0.181818...

2 Write in simplest form.

$$9\sqrt{15} - 4\sqrt{15} + 2\sqrt{3} \cdot 3\sqrt{5}$$

3 Make each conversion.

a) 2.25 yd = _____ in

b) 4,500 m = _____ km

c) 1.5 h = _____ min

d) 3.2 L = _____ mL

4 Write in standard form.

$$6x - 4 + 3x^2 - 9x + 5 - x^2$$

5 Write as an expression: one-third of the difference between five times a number ***n*** and 8.

6 Factor out the greatest common numerical factor.

$$24x^2 - 18x + 30$$

7 Write as a single power of ***x***.

$$\frac{(2x^3)^2 \cdot x^5}{4x^4},$$

where ***x*** is not equal to 0.

8 Select all expressions equivalent to x^{12}, where ***x*** is not equal to 0.

a) $(x^4)^3$

b) $x^8 \cdot x^3$

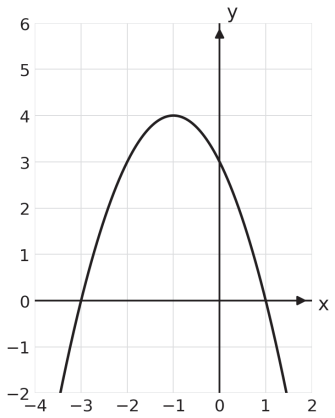
c) $\frac{x^{15}}{x^3}$

d) $x^6 + x^6$

9 Write in simplest form.

$$(5x^2 - 2x + 7) - (3x^2 + 4x - 8) + (x^2 - 6x - 5)$$

10 State all zeros of the function shown.



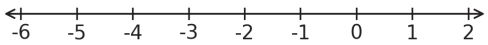
11 A club has $70 for an activity. The booking fee is $17, and admission costs $6 per person. What is the greatest number of people the club can pay for?

12 Solve for h.

$$A = \frac{(b_1 + b_2)h}{2}$$

13 Solve and graph the solution on the number line.

$$5 - 3x \geq 14$$



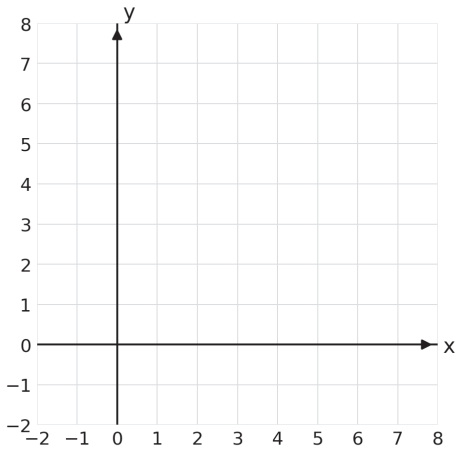
14 Find c so that $x^2 - 14x + c$ is a perfect square trinomial.

15 Solve.

$$(x + 2)^2 = 25$$

16 Solve the system of equations by graphing.

$$\begin{cases} y = x + 1 \\ y = -2x + 7 \end{cases}$$



17 Solve the system of equations using substitution.

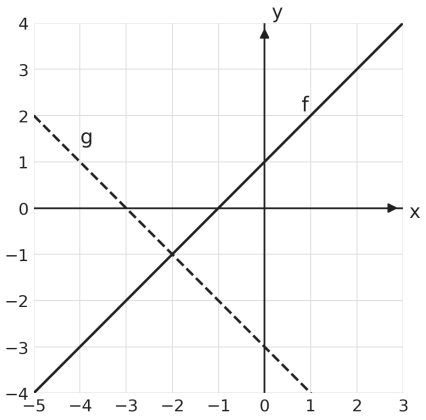
$$\begin{cases} y = 3x - 4 \\ 2x + y = 11 \end{cases}$$

18 How many solutions does the system have? Explain.

$$\begin{cases} 2x + 3y = 6 \\ 4x + 6y = 12 \end{cases}$$

19 Is $(-2, 5)$ a solution of $y \leq -2x + 1$? Justify by substitution.

20 State all values of x for which $f(x) = g(x)$.



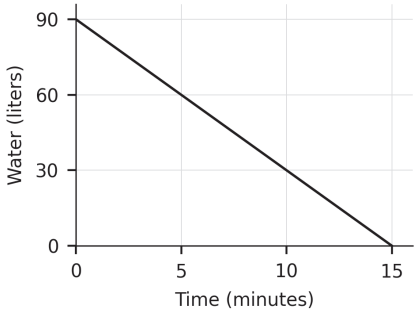
21 Does this relation define a function? Explain.

$$\{(-3, 2), (0, 5), (4, -1), (-3, 7)\}$$

22 Find $f(5)$.

x	-4	-1	2	5	8
$f(x)$	6	-2	9	3	-5

23 The graph shows water draining from a tank. Write an equation for W, the water in liters, after t minutes.



24 Write a function P(t) that models the table.

t	0	1	2	3
$P(t)$	6	18	54	162

25 The data are $4, 5, 5, 6, 40$. Which better represents a typical value: the mean or the median? Explain.

Answer Key Level 2 // Placement Test

Q#	Answer	Topic / code	Level 2 practice problem(s)
1	Rational; rational; irrational; rational.	Number types N-RN.B	1
2	$11\sqrt{15}$	Radical operations; order of operations RAD.A2 / N-RN.B	2
3	a) 81 in; b) 4.5 km; c) 90 min; d) 3,200 mL.	Unit conversions N-Q.A	3
4	$2x^2 - 3x + 1$	Standard form A-SSE.A	4
5	$\frac{5n - 8}{3}$	Verbal expression A-SSE.A	5
6	$6(4x^2 - 3x + 5)$	Numerical GCF A-SSE.A	6
7	x^7	Power, product and quotient rules A-SSE.B	7
8	a) and c)	Equivalent powers A-SSE.B	8
9	$3x^2 - 12x + 10$	Polynomial addition and subtraction A-APR.A	9
10	$-3,\ 1$	Zeros from a graph A-APR.B	10
11	8 people	Cost inequality; whole-number maximum A-CED.A	12
12	$h = \frac{2A}{b_1 + b_2}$	Rearranging a formula A-CED.A	11
13	$x \leq -3$; closed dot at -3, shaded left	Inequality and number-line graph A-REI.B	14, 16
14	$c = 49$	Complete the square A-REI.B Pool: 15	15

Q#	Answer	Topic / code	Level 2 practice problem(s)
15	$x = -7,\ 3$	Solve by inspection A-REI.B	17
16	$(2, 3)$	A system by graphing A-REI.C	18
17	$(3, 5)$	A system by substitution A-REI.C	19
18	Infinitely many solutions.	Number of solutions A-REI.C	20
19	Yes; $5 \leq 5$.	A point and a boundary A-REI.D	27
20	$x = -2$	Equal function values A-REI.D	23
21	No; input -3 has outputs 2 and 7.	Function or non-function F-IF.A	29, 30
22	3	Function notation F-IF.A	28
23	$W = 90 - 6t$	Initial value; rate; linear model F-IF.B / F-IF.C	39; also 32 and 34 for supporting practice
24	$P(t) = 6 \cdot 3^t$	Geometric sequence; exponential model F-BF.A / F-LE.A	31 and 42, related practice
25	Median; the high outlier pulls the mean upward.	A typical value S-ID.A	45 and 46, related practice

Scoring introduction

Each question is worth 2 points. Award partial credit as shown below. Accept equivalent correct expressions and roots in either order. Award 0 points when the required understanding is not demonstrated.

Partial-credit rules

1. Award 0.5 point for each correct classification.
2. Award 1 point for correctly simplifying the product to $6\sqrt{15}$, even if the final answer is incorrect.
3. Award 0.5 point for each correct conversion.
4. Award 1 point for correctly combining at least two groups of like terms.
5. Award 1 point for correctly writing $5n - 8$ but making an error with division by 3.
6. Award 1 point for identifying 6 as the greatest common factor, with an error inside the parentheses.
7. Award 1 point for a correct intermediate expression but an error in the final simplification.
8. Award 2 points for selecting exactly a and c; 1 point for one selection error; 0 points for two or more selection errors. A selection error means choosing an incorrect option or omitting a correct one.
9. Award 1 point for correctly distributing the subtraction or combining at least two groups of like terms.
10. Award 1 point for each correct zero.
11. Award 1 point for a correct model or calculation with an incorrect final answer.
12. Award 1 point for a correct isolation step with an incorrect final formula.
13. Award 1 point for the correct inequality and 1 point for its correct graph.
14. Award 1 point for identifying -7 as half the coefficient of x, without correctly completing the square.
15. Award 1 point for each correct root.
16. Award 1 point for correctly graphing both lines and 1 point for identifying their intersection.
17. Award 1 point for a correct substitution equation and 1 point for the correct ordered pair.
18. Award 1 point for identifying infinitely many solutions and 1 point for explaining that the equations represent the same line.
19. Award 1 point for the correct conclusion and 1 point for correct substitution.
20. Award 1 point for correctly locating the intersection but reporting the wrong coordinate.
21. Award 1 point for identifying that the relation is not a function and 1 point for explaining why.
22. Award 2 points for the correct answer; no partial credit.
23. Award 1 point for identifying either the correct initial amount or rate of change.
24. Award 1 point for identifying either the correct initial value or growth factor.
25. Award 1 point for choosing the median and 1 point for explaining the effect of the outlier.