Pre-Algebra I

TESTS MASTERY OF MATH FOUNDATIONS III · 20 ITEMS · 55-70 MINUTES · NO CALCULATOR

This diagnostic checks whether rational-number fluency, proportional reasoning and early symbol use are secure enough to begin formal algebraic thinking. Several items separate students who can execute a procedure from those who know when it applies.

BEFORE YOU BEGIN

No calculator unless a question says otherwise. Show your working - the method tells us more than the answer.
Leave a question blank rather than guessing. A blank tells us it is unfamiliar; a wrong answer tells us what is believed.
Work alone. Nobody should explain the mathematics or suggest a method.
Stop and resume later if you tire. This is a picture of understanding, not a race.

SECTION A Multiple choice — 10 items

Choose one answer. If you are unsure, leave it blank rather than guessing.

01 Which is largest?

A) 2/3
B) 0.6
C) 62%
D) 5/8

02 -8 - (-3) =

A) -5
B) -11
C) 11
D) 5

03 Which expression means 'twice a number, decreased by seven'?

A) 2n - 7
B) 7 - 2n
C) 2(n - 7)
D) n - 14

04 If 3x = 21, then x =

A) 7
B) 63
C) 18
D) 24

05 A car travels 150 km in 2 hours. At the same rate, how far in 5 hours?

A) 375 km
B) 300 km
C) 75 km
D) 153 km

06 Which is equivalent to 4(2x + 3)?

A) 8x + 12
B) 8x + 3
C) 6x + 7
D) 8x + 34

07 What is 15% of 60?

A) 9
B) 15
C) 4
D) 45

08 The point (3, -2) lies in which quadrant?

A) Fourth
B) First
C) Second
D) Third

09 Which of these is NOT a ratio equivalent to 4:6?

A) 4:8
B) 2:3
C) 8:12
D) 6:9

10 Estimate: 4.9 x 20.2 is closest to

A) 100
B) 10
C) 1000
D) 80

SECTION B Student solving

6 items

Show your working. We are reading the method, not only the answer.

11 Solve for x and show every step: 5x - 4 = 26

12 A shirt costs $24 after a 20% discount. What was the original price? Show your reasoning.

13 Work out -3 x (4 - 7) and explain the order you used.

14 Two numbers are in the ratio 3:5 and add to 64. Find both numbers.

15 Plot and label these points on axes you draw yourself: A(2,3), B(-1,4), C(0,-2).

16 Simplify fully: 6x + 4 - 2x + 9

SECTION C Error analysis

4 items

Each shows work containing a mistake. Find the FIRST incorrect step, say what the student believed, and give the correct answer.

17 Find the first incorrect step, name the belief behind it, and correct it.

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  4(2x + 3)
= 8x + 3
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18 Find and correct the first error.

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  -5 + 3 x 2
= -2 x 2
= -4
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19 A student solved this. Find the first error and give the correct value.

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 2x + 6 = 20
 2x = 26
  x = 13
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20 Explain what is wrong with this reasoning, and give the correct comparison.

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Recipe A: 2 cups sugar to 3 cups flour
Recipe B: 3 cups sugar to 4 cups flour
Student: both add one more flour than sugar,
so they are equally sweet.
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What happens next

Bring this completed sheet to your consultation. A tutor reads it alongside a short conversation with the student and any school work you choose to share, then recommends a level. No placement is ever decided by a score on its own, and no student is placed without a tutor's approval.