Pretest for *Elementary Algebra*

1. Solve for x: $2x = 200$

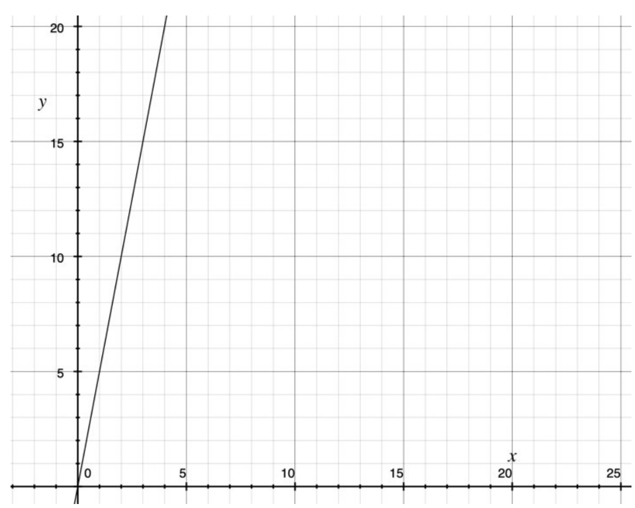
2. Distribute the multiplication: $2(4 + x)$

3. Distribute the multiplication: $2(4 - x)$

4. Find the area of a rectangular garden that's 6 ft. by 10 ft.

5. Find the perimeter of that same rectangular garden.

6. If x represents the minutes and y represents the miles a dirt bike goes, about how far will the bike have gone after 3 minutes?



7. Which equation describes the graph? (circle one)
   a. $y = 2x$
   b. $y = 3x$
   c. $y = 5x$
   d. $y = 2x + 3$

8. Calculate the value of $5x + 3$ if $x = 2$.

9. Simplify: $2(2^2 + 3)^3$

10. Simplify: $x + 2x$

11. Insert the appropriate symbol between these values (choose from =, <, and >):
2 4

12. Simplify: $\frac{4}{16}$

13. Add: $\frac{1}{3} + \frac{2}{5}$

14. Subtract: $\frac{4}{8} - \frac{1}{6}$

15. Solve for x: $\frac{x}{5} = \frac{9}{15}$

16. Simplify: –2 · 4 *(This could also be written as –2 x 4.)*

17. Simplify: 142.2 – 83.3

18. Simplify: 203.4 + 329.2

19. Simplify: 6 x 2.4

20. Simplify: 698 ÷ 3 *(Round to the nearest tenth/1 decimal place)*

21. Stan weighs 500 pounds. If he loses x pounds and now weighs 450 pounds, how much did he lose?

22. Joanna is 18. How old will she be in 3 years?

Grading

Students should have completed a full Pre-Algebra course (e.g., *Principles of Mathematics 2*) and be fluent with basic arithmetic—addition, subtraction, multiplication, division—along with decimals and fractions (as taught in *Principles of Mathematics 1*).

This test is intended to assess knowledge of the material; however, students may occasionally not recall information after a break or find the testing format challenging. It is okay if they momentarily forgot so long as a quick review would jog their memory. The main point is familiarity with using unknowns in simple ways and mastery of basic math.

A missed problem doesn't automatically mean a student isn't ready for Elementary Algebra. Note the concept and plan a brief review before starting the course or when it appears in the lessons. Elementary Algebra includes some review, and the Master Books Academy companion course offers additional explanations and practice. Students should already know the basics well enough that a short refresher quickly rebuilds confidence.

If they get more than five problems wrong, significant revisiting of Pre-Algebra may be needed before starting *Elementary Algebra*. Notes are made next to each problem about what specifically students who get that problem wrong need to review or study.

Success in *Elementary Algebra* also requires strong problem-solving skills— interpreting word problems and recognizing familiar ideas in new forms. Reflect on your student's past performance: if non-routine or word problems were challenging, strongly consider using the Master Books Academy Elementary Algebra course for added modeling and practice. Additional problem-solving instruction is also found in *Principles of Mathematics 1*.

Answers

1. $\boldsymbol{x = 100}$
(divided both sides by 2; skill to review: solving for an unknown in basic equations)

2. $\boldsymbol{2x + 8}$ *or* $\boldsymbol{8 + 2x}$
(multiplied 2 by the 4 and by the x; skill to review: distributive property)

3. $\boldsymbol{-2x + 8}$ *or* $\boldsymbol{8 - 2x}$
(multiplied 2 by the 4 and by $-x$; skill to review: distributive property when there is a minus sign/with negative numbers)

4. **60 ft.^{2}**
(6 ft. x 10 ft.; skill to review: finding the area of a rectangle)

5. **32 ft.**
(6 ft. + 6 ft. + 10 ft. + 10 ft. = 32 ft.; skill to review; finding the perimeter of a rectangle)

6. **15 miles**
(looked at the y value when x was 3—the 3rd tick from 0; skill to review: reading a coordinate graph)

7. **c.** $\boldsymbol{y = 5x}$
(looked at which graph would result in the points shown on the graph; if you plug in 1 for x, you get 5, which is the y value the graph shows when x is 1, etc.; skill to review: coordinate graphing of linear equations)

8. **13**
($5(2) + 3$; skill review: substituting a value for an unknown)

9. **686**
($2(2^2 + 3)^3 = 2(4 + 3)^3 = 2(7)^3 = 2(343) = 686$; skill review: order of operations and exponents)

10. $\boldsymbol{3x}$
(added the coefficients; skill review: combining like terms)

11. **2 < 4**
(skill review: greater than and less than)

12. $\mathbf{\frac{1}{4}}$
(divided both the numerator and denominator by 4; skill review: simplifying fractions)

13. $\mathbf{\frac{11}{15}}$
($\frac{1}{3}+\frac{2}{5}=\frac{5}{15}+\frac{6}{15}=\frac{11}{15}$; skill review: adding fractions and forming equivalent fractions)

14. $\mathbf{\frac{1}{3}}$ *or* $\mathbf{\frac{2}{6}}$
($\frac{4}{8}-\frac{1}{6}=\frac{3}{6}-\frac{1}{6}=\frac{2}{6}=\frac{1}{3}$; skill to review: subtracting fractions and forming equivalent fractions)

15. **3**
(either cross multiplied or realized that since denominator of 2nd fraction was 3 times the first fraction's denominator, we needed to divide numerator by 3 to find the first fraction's numerator; skill review: solving proportions)

16. **–8**
(skill review: multiplying negative numbers)

17. **58.9**
(skill review: subtracting decimal numbers with borrowing)

18. **532.6**
(skill review: adding decimal numbers with carrying)

19. **14.4**
(skill review: multiplication of decimal numbers)

20. **232.7**
(skill review: long division and rounding)

21. **50**
($500 - 450 = x;\ 50 = x$; skill review: word problems)

22. **21**
(18 + 3 = 21; skill review: word problems)