

## Algebra I Quarter 4 Exam

### Algebra I Quarter 4 Exam

Name/Student Number: \_\_\_\_\_

Score: \_\_\_\_\_ / \_\_\_\_\_

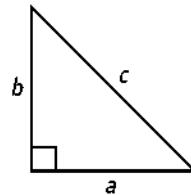
**Directions:** For each question show all work that is required to arrive at the solution. Save this document with your answers and submit as an attachment to be graded.

Use the triangle at the right. Find the length of the missing side.

Show your work.

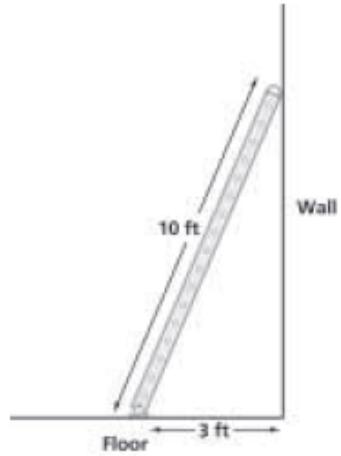
1.  $a = 16, b = 63$

2.  $b = 2.1, c = 2.9$



3. A 10-foot ladder leans against a wall with its foot braced 3 feet from the wall's base. How far up the wall does the ladder reach?

Show your work. Round answer to the nearest hundredths.



4. A square picture frame occupies an area of  $112 \text{ ft}^2$ . What is the length of each side of the picture in simplified radical form? Show your work.

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Simplify each radical expression. Leave in radical form. Show your work.

5.  $\sqrt{45n^5}$

6.  $\sqrt{75} + \sqrt{3}$

7.  $\sqrt{7}(\sqrt{14} + \sqrt{3})$

Simplify the rational expressions. State any excluded values. Show your work.

8.  $\frac{3x - 6}{x - 2}$

9.  $\frac{x - 2}{x^2 + 3x - 10}$

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Multiply or divide. Show your work.

10. 
$$\frac{5x+10}{x+2} \cdot \frac{2x}{4x-10}$$

11. 
$$\frac{3n^2 - n}{n^2 - 1} \div \frac{n^2}{n + 1}$$

12. The width  $w$  of a rectangular swimming pool is  $7x^2$ . The area  $A$  of the pool is  $7x^3 - 42x^2$ . What is an expression for the length of the pool? Show your work.

Determine whether each question is biased. Explain your answer.

13. A questionnaire about movie preferences asks if you would rather watch a boring documentary or an exciting action movie?

14. A beverage company conducts a survey in the lobby of a health club to determine people's favorite beverage.

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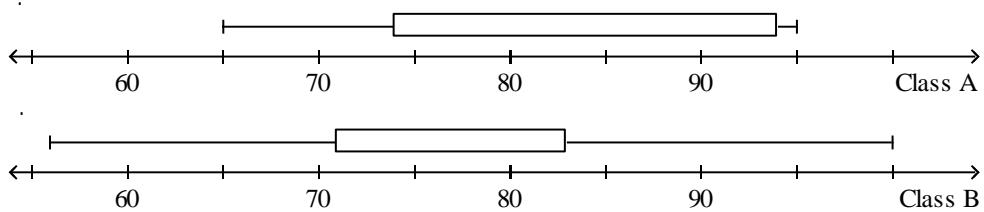
As cars passed a checkpoint, the following speeds were clocked and recorded.

Speed (mph): 55 62 61 54 68 72 59 61 70

15. Find the mean and the range of the data set. Show your work.

16. What are the minimum, first quartile, median, third quartile, and maximum of the data set? Show your work.

17. The two box-and-whisker plots below show the scores on a math exam for two classes. What 2 things do the interquartile ranges tell you about the two classes?



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Find the value of each expression. Show your work.

18.  ${}_9P_3$

19.  ${}_{10}C_4$

20. There are 15 members of the show choir. In how many ways can you arrange 4 members in the front row when order does not matter?