SEVENTH GRADE MATHEMATICS

ANSWERS

1. (7.1.1.1) A
Know that every rational number can be written as the ratio of two integers or as a terminating or repeating decimal. Recognize that π is not rational, but that it can be approximated by rational numbers such as 22/7 or 3.14.

2. (7.1.1.3) D
Locate positive and negative rational numbers on a number line, understand the concept of opposites, and plot pairs of positive and negative rational numbers on a coordinate grid.

3. (7.1.1.4) D
Compare positive and negative rational numbers expressed in various forms using the symbols $<, >, =, \leq,$ and $\geq$.

4. (7.1.1.5) C
Recognize and generate equivalent representations of positive and negative rational numbers, including equivalent fractions.

5. (7.1.2.1) C
Add, subtract, multiply, and divide positive and negative rational numbers that are integers, fractions, and terminating decimals; use efficient and generalizable procedures, including standard algorithms; raise positive rational numbers to whole number exponents.

6. (7.1.2.2) C
Use real-world contexts and the inverse relationship between addition and subtraction to explain why the procedures of arithmetic with negative rational numbers make sense.

7. (7.1.2.1) B
Add, subtract, multiply, and divide positive and negative rational numbers that are integers, fractions, and terminating decimals; use efficient and generalizable procedures, including standard algorithms; raise positive rational numbers to whole number exponents.

8. (7.1.2.4) A
Solve problems in various contexts involving calculations with positive and negative rational numbers and positive integer exponents, including computing simple and compound interest.

9. (7.1.2.5) D
Use proportional reasoning to solve problems involving ratios in various contexts.

10. (7.1.2.6) D
Demonstrate an understanding of the relationship between the absolute value of a rational number and distance on a number line. Use the symbol for absolute value.

11. (7.1.2.5) D
Use proportional reasoning to solve problems involving ratios in various contexts.

12. (7.2.1.2) C
Understand that the graph of a proportional relationship is a line through the origin whose slope is the unit rate (constant of proportionality). Know how to use the graphing technology to examine what happens to a line when the unit rate is changed.

13. (7.2.1.1) D
Understand that a relationship between two variables, x and y, is proportional if it can be expressed in the form $y/x = k$ or $y = kx$. Distinguish proportional relationships from other relationships, including inversely proportional relationships ($xy = k$ or $y = k/x$).

14. (7.2.2.1) D
Represent proportional relationships with tables, verbal descriptions, symbols, equations and graphs; translate from one representation to another. Determine the unit rate (constant of proportionality or slope) given any of these representations.

15. (7.2.2.2) B
Solve multi-step problems involving proportional relationships in numerous contexts.

16. (7.2.2.1) A
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17. (7.2.2.2) B
Solve multi-step problems involving proportional relationships in numerous contexts.

18. (7.2.2.2) A
Solve multi-step problems involving proportional relationships in numerous contexts.

19. (7.2.3.1) A
Use properties of algebra to generate equivalent numerical and algebraic expressions containing rational numbers, grouping symbols, and whole number exponents. Properties of algebra include associative, commutative and distributive laws.

20. (7.2.3.2) B
Evaluate algebraic expressions containing rational numbers and whole number exponents at specified values of their variables.

21. (7.2.3.1) B
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22. (7.2.3.2) C
Evaluate algebraic expressions containing rational numbers and whole number exponents at specified values of their variables.

23. (7.2.4.1) C
Represent relationships in various contexts with equations involving variables and positive and negative rational numbers. Use properties of equality to solve for the value of a variable. Interpret the solution in original context.

24. (7.2.4.1) D
Represent relationships in various contexts with equations involving variables and positive and negative rational numbers. Use properties of equality to solve for the value of a variable. Interpret the solution in original context.

25. (7.2.4.2) A
Solve equations resulting from proportional relationships in various contexts.

26. (7.2.4.2) C
Solve equations resulting from proportional relationships in various contexts.

27. (7.3.1.1) B
Demonstrate an understanding of the proportional relationship between the diameter and circumference of a circle and that the unit rate (constant of proportionality) is π. Calculate the circumference and area of circles to solve problems in various contexts.

28. (7.3.1.2) A

Calculate the volume and surface area of cylinders and justify the formulas used.

29. (7.3.1.2) C

Calculate the volume and surface area of cylinders and justify the formulas used.

30. (7.3.2.1) A

Describe the properties of similarity, compare geometric figures for similarity and determine scale factors.

31. (7.3.2.2) C

Apply scale factors, length ratios and area ratios to determine side lengths and areas of similar geometric figures.

32. (7.3.2.3) C

Use proportions and ratios to solve problems involving scale drawings and conversions of measurement units.

33. (7.3.2.4) A

Graph and describe translations and reflections of figures on a coordinate grid and determine the coordinates of the vertices of the figure after the translation.

34. (7.4.1.1) C

Design simple experiments and collect data. Determine mean, median and range of quantitative data and from data represented in a display. Use these quantities to draw conclusions about the data, compare different data sets and make predictions.

35. (7.4.1.1) B

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36. (7.4.1.2) A

Describe the impact that inserting or deleting a data point has on the mean and the median of a data set. Know how to create data displays using a spreadsheet to examine this impact.

37. (7.4.2.1) D

Use reasoning with proportions to display and interpret data in circle graphs (pie charts) and histograms. Choose the appropriate data display and know how to create the display using a spreadsheet or other graphing technology.

38. (7.4.3.2) A

Calculate probability as a fraction of sample space or as a fraction of area. Express probabilities as percents, decimals and fractions.

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Calculate probability as a fraction of sample space or as a fraction of area. Express probabilities as percents, decimals and fractions.

40. (7.4.3.3) B

Use proportional reasoning to draw conclusions about and predict relative frequencies of outcomes based on probabilities.