Introduction - Grade 6 Mathematics

The following released test questions are taken from the Grade 6 Mathematics Standards Test. This test is one of the California Standards Tests administered as part of the Standardized Testing and Reporting (STAR) Program under policies set by the State Board of Education.

All questions on the California Standards Tests are evaluated by committees of content experts, including teachers and administrators, to ensure their appropriateness for measuring the California academic content standards in Grade 6 Mathematics. In addition to content, all items are reviewed and approved to ensure their adherence to the principles of fairness and to ensure no bias exists with respect to characteristics such as gender, ethnicity, and language.

This document contains released test questions from the California Standards Test forms in 2003, 2004, 2005, 2006, and 2007. First on the pages that follow are lists of the standards assessed on the Grade 6 Mathematics Test. Next are released test questions. Following the questions is a table that gives the correct answer for each question, the content standard that each question is measuring, and the year each question last appeared on the test.

The following table lists each strand/reporting cluster, the number of items that appear on the exam, and the number of released test questions that appear in this document.

<table>
<thead>
<tr>
<th>STRAND/REPORTING CLUSTER</th>
<th>NUMBER OF QUESTIONS ON EXAM</th>
<th>NUMBER OF RELEASED TEST QUESTIONS</th>
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<tbody>
<tr>
<td>Number Sense – Ratios, Proportions, Percentages, and Negative Fractions</td>
<td>15</td>
<td>17</td>
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<tr>
<td>Number Sense – Operations and Problem Solving with Fractions</td>
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<td>13</td>
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<tr>
<td>Algebra and Functions</td>
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<td>Measurement and Geometry</td>
<td>10</td>
<td>13</td>
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<tr>
<td>Statistics, Data Analysis, and Probability</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>TOTAL</td>
<td>65</td>
<td>80</td>
</tr>
</tbody>
</table>

In selecting test questions for release, three criteria are used: (1) the questions adequately cover a selection of the academic content standards assessed on the Grade 6 Mathematics Test; (2) the questions demonstrate a range of difficulty; and (3) the questions present a variety of ways standards can be assessed. These released test questions do not reflect all of the ways the standards may be assessed. Released test questions will not appear on future tests.

For more information about the California Standards Tests, visit the California Department of Education’s Web site at [http://www.cde.ca.gov/ta/tg/sr/resources.asp](http://www.cde.ca.gov/ta/tg/sr/resources.asp).
THE NUMBER SENSE STRAND

In Grade 6, there are two reporting clusters within the Number Sense strand: 1) Ratios, Proportions, Percentages, and Negative Fractions and 2) Operations and Problem Solving with Fractions. This booklet contains released test questions for each of these clusters.

The following four California content standards are included in the Ratios, Proportions, Percentages, and Negative Fractions reporting cluster of the Number Sense strand and are represented in this booklet by 17 test questions. These questions represent only some ways in which these standards may be assessed on the Grade 6 California Mathematics Standards Test.

### CALIFORNIA CONTENT STANDARDS IN THIS REPORTING CLUSTER

<table>
<thead>
<tr>
<th>Number Sense</th>
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</thead>
<tbody>
<tr>
<td>Standard Set 1.0* Students compare and order positive and negative fractions, decimals, and mixed numbers. Students solve problems involving fractions, ratios, proportions, and percentages:</td>
</tr>
<tr>
<td>6NS1.1* Compare and order positive and negative fractions, decimals, and mixed numbers and place them on a number line.</td>
</tr>
<tr>
<td>6NS1.2* Interpret and use ratios in different contexts (e.g., batting averages, miles per hour) to show the relative sizes of two quantities, using appropriate notations ( a/b, a ) to ( b, a:b ).</td>
</tr>
<tr>
<td>6NS1.3* Use proportions to solve problems (e.g., determine the value of ( N ) if ( 4/7 = N/21 ), find the length of a side of a polygon similar to a known polygon). Use cross-multiplication as a method for solving such problems, understanding it as the multiplication of both sides of an equation by a multiplicative inverse.</td>
</tr>
<tr>
<td>6NS1.4* Calculate given percentages of quantities and solve problems involving discounts at sales, interest earned, and tips.</td>
</tr>
</tbody>
</table>

* Denotes key standards (*Mathematics Framework for California Public Schools*)
The following four California content standards are included in the Operations and Problem Solving with Fractions reporting cluster of the Number Sense strand and are represented in this booklet by 13 test questions. These questions represent only some ways in which these standards may be assessed on the Grade 6 California Mathematics Standards Test.

### CALIFORNIA CONTENT STANDARDS IN THIS REPORTING CLUSTER

<table>
<thead>
<tr>
<th>Number Sense</th>
<th>Students calculate and solve problems involving addition, subtraction, multiplication, and division:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Set 2.0</strong>*</td>
<td>Solve problems involving addition, subtraction, multiplication, and division of positive fractions and explain why a particular operation was used for a given situation.</td>
</tr>
<tr>
<td>6NS2.1</td>
<td>Explain the meaning of multiplication and division of positive fractions and perform the calculations (e.g., ( \frac{5}{8} ) divided by ( \frac{15}{16} ) = ( \frac{5}{8} \times \frac{16}{15} = \frac{2}{3} )).</td>
</tr>
<tr>
<td>6NS2.2</td>
<td>Solve addition, subtraction, multiplication, and division problems, including those arising in concrete situations, that use positive and negative integers and combinations of these operations.</td>
</tr>
<tr>
<td>6NS2.3*</td>
<td>Determine the least common multiple and the greatest common divisor of whole numbers; use them to solve problems with fractions (e.g., to find a common denominator to add two fractions or to find the reduced form for a fraction).</td>
</tr>
</tbody>
</table>

* Denotes key standards (Mathematics Framework for California Public Schools)
THE ALGEBRA AND FUNCTIONS STRAND/REPORTING CLUSTER

The following nine California content standards are included in the Algebra and Functions strand/reporting cluster and are represented in this booklet by 25 test questions. These questions represent only some ways in which these standards may be assessed on the Grade 6 California Mathematics Standards Test.

CALIFORNIA CONTENT STANDARDS IN THIS STRAND/CLUSTER

<table>
<thead>
<tr>
<th>Algebra and Functions</th>
<th>Standard Set 1.0</th>
<th>Students write verbal expressions and sentences as algebraic expressions and equations; they evaluate algebraic expressions, solve simple linear equations, and graph and interpret their results:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6AF1.1*</td>
<td>Write and solve one-step linear equations in one variable.</td>
</tr>
<tr>
<td></td>
<td>6AF1.2</td>
<td>Write and evaluate an algebraic expression for a given situation, using up to three variables.</td>
</tr>
<tr>
<td></td>
<td>6AF1.3</td>
<td>Apply algebraic order of operations and the commutative, associative, and distributive properties to evaluate expressions; and justify each step in the process.</td>
</tr>
<tr>
<td></td>
<td>6AF1.4</td>
<td>Solve problems manually by using the correct order of operations or by using a scientific calculator.</td>
</tr>
<tr>
<td>Standard Set 2.0</td>
<td>Students analyze and use tables, graphs, and rules to solve problems involving rates and proportions:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6AF2.1</td>
<td>Convert one unit of measurement to another (e.g., from feet to miles, from centimeters to inches).</td>
</tr>
<tr>
<td></td>
<td>6AF2.2*</td>
<td>Demonstrate an understanding that rate is a measure of one quantity per unit value of another quantity.</td>
</tr>
<tr>
<td></td>
<td>6AF2.3</td>
<td>Solve problems involving rates, average speed, distance, and time.</td>
</tr>
<tr>
<td>Standard Set 3.0</td>
<td>Students investigate geometric patterns and describe them algebraically:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6AF3.1</td>
<td>Use variables in expressions describing geometric quantities (e.g., ( P=2w + 2l ), ( A = \frac{1}{2} bh ), ( C = \pi d ) — the formulas for the perimeter of a rectangle, the area of a triangle, and the circumference of a circle, respectively).</td>
</tr>
<tr>
<td></td>
<td>6AF3.2</td>
<td>Express in symbolic form simple relationships arising from geometry.</td>
</tr>
</tbody>
</table>

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THE MEASUREMENT AND GEOMETRY STRAND/REPORTING CLUSTER

The following six California content standards are included in the Measurement and Geometry strand/reporting cluster and are represented in this booklet by 13 test questions. These questions represent only some ways in which these standards may be assessed on the Grade 6 California Mathematics Standards Test.

CALIFORNIA CONTENT STANDARDS IN THIS STRAND/CLUSTER

<table>
<thead>
<tr>
<th>Measurement and Geometry</th>
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<tbody>
<tr>
<td><strong>Standard Set 1.0</strong></td>
</tr>
<tr>
<td>Students deepen their understanding of the measurement of plane and solid shapes and use this understanding to solve problems:</td>
</tr>
<tr>
<td>6MG1.1*</td>
</tr>
<tr>
<td>Understand the concept of a constant such as ( \pi ); know the formulas for the circumference and area of a circle.</td>
</tr>
<tr>
<td>6MG1.2</td>
</tr>
<tr>
<td>Know common estimates of ( \pi ) (3.14; 22/7) and use these values to estimate and calculate the circumference and the area of circles; compare with actual measurements.</td>
</tr>
<tr>
<td>6MG1.3</td>
</tr>
<tr>
<td>Know and use the formulas for the volume of triangular prisms and cylinders (area of base ( \times ) height); compare these formulas and explain the similarity between them and the formula for the volume of a rectangular solid.</td>
</tr>
</tbody>
</table>

| **Standard Set 2.0**     |
| Students identify and describe the properties of two-dimensional figures: |
| 6MG2.1                   |
| Identify angles as vertical, adjacent, complementary, or supplementary and provide descriptions of these terms. |
| 6MG2.2*                  |
| Use the properties of complementary and supplementary angles and the sum of the angles of a triangle to solve problems involving an unknown angle. |
| 6MG2.3                   |
| Draw quadrilaterals and triangles from given information about them (e.g., a quadrilateral having equal sides but no right angles, a right isosceles triangle). |

* Denotes key standards (*Mathematics Framework for California Public Schools*)
THE STATISTICS, DATA ANALYSIS, AND PROBABILITY STRAND/REPORTING CLUSTER

The following nine California content standards are included in the Statistics, Data Analysis, and Probability strand/reporting cluster and are represented in this booklet by 12 test questions. These questions represent only some ways in which these standards may be assessed on the Grade 6 California Mathematics Standards Test.

CALIFORNIA CONTENT STANDARDS IN THIS STRAND/CLUSTER

<table>
<thead>
<tr>
<th>Statistics, Data Analysis, and Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Set 1.0</strong></td>
</tr>
<tr>
<td>6PS1.1</td>
</tr>
<tr>
<td>6PS1.2</td>
</tr>
<tr>
<td>6PS1.3</td>
</tr>
<tr>
<td><strong>Standard Set 2.0</strong></td>
</tr>
<tr>
<td>6PS2.2*</td>
</tr>
<tr>
<td>6PS2.5*</td>
</tr>
<tr>
<td><strong>Standard Set 3.0</strong></td>
</tr>
<tr>
<td>6PS3.1*</td>
</tr>
<tr>
<td>6PS3.3*</td>
</tr>
<tr>
<td>6PS3.4</td>
</tr>
<tr>
<td>6PS3.5*</td>
</tr>
</tbody>
</table>

* Denotes key standards (Mathematics Framework for California Public Schools)
1. Which point shows the location of $\frac{3}{2}$ on the number line?

A. point A  
B. point B  
C. point C  
D. point D

2. Which list of numbers is ordered from least to greatest?

A. $\frac{1}{2}, \frac{2}{3}, 0.2, 0.02$  
B. $0.02, 0.2, \frac{1}{2}, \frac{1}{2}$  
C. $0.02, 0.2, \frac{1}{2}, 2\frac{1}{2}$  
D. $0.2, \frac{1}{2}, 0.02, 2\frac{1}{2}$

3. Which of the following fractions is closest to 0?

A. $\frac{5}{12}$  
B. $\frac{2}{3}$  
C. $\frac{5}{6}$  
D. $\frac{3}{4}$

4. What is the order of the following set of numbers from greatest to least?

$$\frac{1}{3}, \frac{2}{3}, \frac{9}{3}, -\frac{1}{3}, \frac{1}{5}, \frac{2}{5}, \frac{1}{3}, \frac{2}{3}, -\frac{1}{3}$$

A. $\frac{1}{3}, \frac{2}{3}, \frac{9}{3}, -\frac{1}{3}$  
B. $-\frac{1}{3}, \frac{1}{5}, \frac{2}{3}, \frac{9}{3}$  
C. $\frac{9}{5}, \frac{2}{3}, \frac{1}{3}, -\frac{1}{3}$  
D. $\frac{9}{5}, \frac{1}{3}, \frac{2}{3}, -\frac{1}{3}$

5. The weekly milk order for the Tranquility Inn includes 40 gallons of low-fat milk and 15 gallons of chocolate milk. What is the ratio of the number of low-fat gallons to chocolate gallons in the Tranquility Inn’s weekly milk order?

A. 3:1  
B. 5:1  
C. 5:3  
D. 8:3

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6. \( \triangle ABC \) is similar to \( \triangle DEF \). What is the length of \( DF \)?

- A 2 meters
- B 3 meters
- C 5 meters
- D 10 meters

7. A farmer harvested 14,000 pounds of almonds from an 8-acre orchard. Which proportion could be solved to find \( x \), the expected harvest from a 30-acre orchard?

- A \( \frac{8}{14,000} = \frac{x}{30} \)
- B \( \frac{8}{14,000} = \frac{30}{x} \)
- C \( \frac{30}{14,000} = \frac{x}{8} \)
- D \( \frac{30}{14,000} = \frac{8}{x} \)

8. A certain map uses a scale of 1 inch equals 25 miles. How many miles are represented by 5 inches on this map?

- A 5
- B 25
- C 50
- D 125

9. When wheel \( B \) turns 2 revolutions, wheel \( A \) turns 5 revolutions. When wheel \( A \) turns 40 revolutions, how many revolutions does wheel \( B \) turn?

- A 4
- B 16
- C 80
- D 100
10. A company makes 5 blue cars for every 3 white cars it makes. If the company makes 15 white cars in one day, how many blue cars will it make?
   A 9
   B 13
   C 17
   D 25

11. In a scale drawing, $\frac{1}{2}$ inch represents 3 feet. If the same scale is used, how many inches will be needed to represent 24 feet?
   A 2 inches
   B 4 inches
   C 8 inches
   D 12 inches

12. A survey of 1000 registered voters revealed that 450 people would vote for candidate A in an upcoming election. If 220,000 people vote in the election, how many votes would the survey takers predict candidate A should receive?
   A 44,500
   B 48,900
   C 95,000
   D 99,000

13. If $\triangle XYZ$ is similar to $\triangle STU$, what is the length of $\overline{XY}$ in centimeters?

   \[ \begin{align*}
   X & \quad 3 \text{ cm} \\
   T & \quad 1 \text{ cm} \\
   S & \quad 3.5 \text{ cm} \\
   Y & \quad 9 \text{ cm}
   \end{align*} \]

   A 9
   B 10.5
   C 12
   D 12.5

14. The vice president of sales took a client out to lunch. If the lunch was $44 and she gave a 20% tip, how much money did she spend on lunch?
   A $8.80
   B $35.20
   C $52.80
   D $53.80

15. If 50% of a number is 20, what is 75% of the number?
   A 8
   B 15
   C 30
   D 45
16. What is 60% of 30?
   A. 1.8
   B. 18
   C. 180
   D. 1800

17. The original price of a new bicycle is $138.00. If the bicycle is marked down 15%, what is the new price?
   A. $20.70
   B. $117.30
   C. $123.00
   D. $153.00

18. What is $\frac{10}{11} \times \frac{11}{12}$?
   A. $\frac{5}{6}$
   B. $\frac{21}{23}$
   C. $1 \frac{1}{120}$
   D. 2

19. $\frac{7}{9} \times \frac{2}{9} =$
   A. $\frac{9}{81}$
   B. $\frac{14}{81}$
   C. $\frac{9}{9}$
   D. $\frac{14}{9}$

20. What is the product of $\frac{2}{5}$ and $\frac{4}{5}$?
   A. $\frac{1}{5}$
   B. $\frac{8}{25}$
   C. $\frac{1}{2}$
   D. $\frac{6}{5}$

21. A group of hikers climbed from Salt Flats (elevation -55 feet) to Talon Bluff (elevation 620 feet). What is the difference in elevation between Talon Bluff and Salt Flats?
   A. 565 feet
   B. 575 feet
   C. 665 feet
   D. 675 feet
22. \(12 \div -3 = \)
   - A. 9
   - B. 4
   - C. \(-\frac{1}{4}\)
   - D. -4

23. One morning, the temperature was 5° below zero. By noon, the temperature rose 20° Fahrenheit (F) and then dropped 8°F by evening. What was the evening temperature?
   - A. 17° below zero
   - B. 15° below zero
   - C. 12° above zero
   - D. 7° above zero

24. \(-4 + (-3) = \)
   - A. -7
   - B. -1
   - C. 1
   - D. 7

25. The price of a share of stock for company XYZ at the beginning of the week was $24.75. Over the next five days, the stock gained $2.50 on Monday, lost $3.25 on Tuesday, lost $0.75 on Wednesday, gained $1.25 on Thursday, and gained $4.75 on Friday. What was the price of the share of stock at the end of Friday?
   - A. $12.25
   - B. $25.75
   - C. $29.25
   - D. $37.25

26. The ticket prices to a play are $5.00 for teachers and $3.00 for students. How much will it cost for a group of 71 students and 5 teachers to see the play?
   - A. $228.00
   - B. $238.00
   - C. $370.00
   - D. $380.00

27. A soccer team has $90.00 to buy soccer balls. If one soccer ball costs $15.60, what is the greatest number of soccer balls the team can buy?
   - A. 4
   - B. 5
   - C. 6
   - D. 7
28. \[
\frac{3}{8} + \frac{1}{12} =
\]
A. \(\frac{1}{5}\)
B. \(\frac{1}{6}\)
C. \(\frac{11}{24}\)
D. \(\frac{11}{48}\)

29. What is the greatest common divisor of 54, 36, and 24?
A. 2
B. 3
C. 6
D. 9

30. What is \(\frac{12}{60}\) expressed in lowest terms?
A. \(\frac{1}{8}\)
B. \(\frac{1}{6}\)
C. \(\frac{1}{5}\)
D. \(\frac{1}{4}\)

31. What value of \(k\) makes the following equation true?
\[k ÷ 3 = 36\]
A. 108
B. 98
C. 39
D. 12

32. The Sojourn family went on a vacation. They started with $2000. If they spent $150 each day, which expression represents how much money they had after \(x\) days?
A. 1850\(x\)
B. 2000 \(- 150x\)
C. 150\(x\)
D. 2000 \(+ 150x\)

33. Ellen had some change in her pocket. After her friend gave her $0.45, Ellen had $1.35 altogether. Which equation can she use to find the original amount of money, \(m\), she had in her pocket?
A. \(m + 0.45 = 1.35\)
B. \(1.35 = m - 0.45\)
C. \(m = 1.35 \times 0.45\)
D. \(m + 1.35 = 0.45\)
34. Which algebraic equation best describes the total growth \((T)\) in height of pine trees over a 3-year period, if \(g\) equals the rate of growth in centimeters per year?

A. \(T = 3g\)
B. \(T = 3 + g\)
C. \(T = \frac{g}{3}\)
D. \(T = \frac{3}{g}\)

35. If \(x - 3 = 6\), what is the value of \(x\)?

A. 2
B. 3
C. 6
D. 9

36. What is \(x\) if \(3x = 84\)?

A. 20
B. 21
C. 26
D. 28

37. In the equation \(x + y = 4\), what is the value of \(x\) if \(y = 2\)?

A. 2
B. 4
C. 6
D. 8

38. A telephone company charges $0.05 per minute for local calls and $0.12 per minute for long-distance calls. Which expression gives the total cost in dollars for \(x\) minutes of local calls and \(y\) minutes of long-distance calls?

A. \(0.05x + 0.12y\)
B. \(0.05x - 0.12y\)
C. \(0.17(x + y)\)
D. \(0.17xy\)

39. The steps Quentin took to evaluate the expression \(3m - 3 \div 3\) when \(m = 8\) are shown below.

\[
\begin{align*}
3 \times 8 &= 24 \\
24 - 3 &= 21 \\
21 \div 3 &= 7
\end{align*}
\]

What should Quentin have done differently in order to evaluate the expression?

A. divided \((24 - 3)\) by \((24 \times 3)\)
B. divided \((24 - 3)\) by \((24 - 3)\)
C. subtracted \((3 \div 3)\) from 24
D. subtracted 3 from \((24 \div 3)\)
40 \[8 + 8 \div 2 + 2 = \]
A 4  
B 8  
C 10  
D 14

41 \[(5 + 2)(6 - (3 + 2)) = \]
A 7  
B 8  
C 12  
D 13

42 How many inches are in \(2 \frac{1}{2}\) feet?
A 24 inches  
B 25 inches  
C 29 inches  
D 30 inches

43 Sandra had a recipe that required \(\frac{1}{3}\) pound of beef.

\[\text{Pound Equivalent}\]
1 pound = 453.6 grams

Using the table above, about how many grams of beef does she need?
A 5  
B 151  
C 454  
D 1361

44 It takes a machine 12 minutes to fill 200 bottles of soda. At this rate, how many minutes will it take the machine to fill 500 bottles of soda?
A 25 minutes  
B 28 minutes  
C 30 minutes  
D 40 minutes

45 Trish’s resting heart rate is 50 beats per minute. For every minute she exercises, her heart rate increases 5 beats per minute. How long will it take her to reach a heart rate of 120 beats per minute?
A 5 minutes  
B 14 minutes  
C 34 minutes  
D 70 minutes

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46 Marcus spent $3.25 to wash his car. If one quarter operates the car wash for 60 seconds, how long did it take him to wash his car?

A 10 minutes  
B 13 minutes  
C 16 minutes  
D 32.5 minutes

47 A car gets 24 miles per gallon of gasoline (mi/gal). How many gallons of gasoline would the car need to travel 144 miles?

A 6.5 gallons  
B 6 gallons  
C 5.5 gallons  
D 5 gallons

48 Sheila has been given 5 minutes to solve 20 arithmetic problems. What is the minimum rate Sheila can work in order to finish in time?

A 1 problem per minute  
B 2 problems per minute  
C 4 problems per minute  
D 5 problems per minute

49 A water tank will hold 50 gallons. What flow rate, in gallons per second, is required to fill the tank in 20 seconds?

A 0.4  
B 2.5  
C 16.7  
D 70

50 A snail is trying to get to the other side of a park. At what rate is the snail traveling?

A \( \frac{1}{2} \) foot per minute  
B 1 foot per minute  
C \( \frac{1}{2} \) feet per minute  
D 2 feet per minute

51 Jerry read a 200-page book in 10 hours. At that rate, how long will it take him to read a 320-page book?

A 16 hours  
B 18 hours  
C 24 hours  
D 32 hours
52. If a freight train travels at a speed of 20 miles per hour for 6 hours, how far will it travel?
A. 120 miles  
B. 80 miles  
C. 26 miles  
D. 12 miles

53. A square with a side of $x$ is inside a square with a side of 4, as pictured below. Which expression represents the area of the shaded region in terms of $x$?
A. $16 + x^2$  
B. $16 - x^2$  
C. $16 - 2x$  
D. $16 - 4x$

54. The rectangle shown below has length 15 inches and perimeter $P$ inches.

Which equation could be used to find the width of the rectangle?
A. $P = 15 + \frac{w}{2}$  
B. $P = 15 - w$  
C. $P = 30 + 2w$  
D. $P = 30 - 2w$
55. An isosceles triangle has two sides with length \(x\). The third side is \(\frac{1}{2}x\). What is the perimeter?

A. \(2\frac{1}{2}x\)

B. \(3x\)

C. \(4\frac{1}{2}x\)

D. \(5x\)

56. Which equation could be used to find the area in square inches of a circle with a radius of 8 inches?

A. \(A = 4 \times \pi\)

B. \(A = \pi \times 4^2\)

C. \(A = 8 \times \pi\)

D. \(A = \pi \times 8^2\)

57. A Ferris wheel at the local fair has a diameter of 52 meters. Which expression can be used to find its circumference, \(C\), in meters?

A. \(C = 26 \times \pi\)

B. \(C = 52 \times \pi\)

C. \(C = 2 \times 52 \times \pi\)

D. \(C = 26^2 \pi\)
58. A bicycle wheel has an inside radius of 12 inches. Which expression could be used to find the inside circumference of this wheel?

- A) $2 \times 6 \times \pi$
- B) $2 \times 12 \times \pi$
- C) $9 \times 9 \times \pi$
- D) $12 \times 12 \times \pi$

59. This circular stage has a radius of 25 meters. Which equation could be used to find the area of the stage in square meters?

- A) $A = 25\pi$
- B) $A = 50\pi$
- C) $A = \pi \cdot 25^2$
- D) $A = \pi \cdot 50^2$
60 The top part of this hat is shaped like a cylinder with a diameter of 7 inches.

Which measure is closest to the length of the band that goes around the outside of the hat?

A 10.1 inches  
B 11.0 inches  
C 22.0 inches  
D 38.5 inches

61 A dime has a radius of about 0.85 cm. Which measurement is closest to the circumference of a dime?

A 1.33 cm  
B 1.70 cm  
C 2.67 cm  
D 5.34 cm

62 A tank is in the shape of a triangular prism. If the triangular base has an area of 116 square feet, and the tank is 30 feet tall, how much water would the tank contain when it is full?

A 1725 ft³  
B 1740 ft³  
C 3480 ft³  
D 6960 ft³
63 Which is a true statement about angles 1 and 2 shown below?

A $\angle 1$ is complementary to $\angle 2$.
B $\angle 1$ is supplementary to $\angle 2$.
C Both angles are obtuse.
D Both angles are acute.

64 What is the measure of angle 1 in the figure below?

A 30°
B 40°
C 60°
D 80°

65 In the figure below, $\overline{CD}$ intersects $\overline{AB}$ at $F$, $m\angle CFB = 50^\circ$, and $\angle EFA \cong \angle AFD$. What is $m\angle EFC$?

A 40°
B 50°
C 70°
D 80°

66 In the figure below, $\triangle ABC$ is a right triangle and $m\angle A = 40^\circ$.

What is $m\angle ECD$?

A 40°
B 50°
C 130°
D 140°
67. What is the supplement of a 40° angle?
   A) 50°
   B) 130°
   C) 140°
   D) 220°

68. Which figure is an acute triangle?
   A)
   B)
   C)
   D)

69. Abe found the mean and median of this list of numbers.
   1, 3, 3
   If the number 6 were added to the list, then
   A) the mean would increase.
   B) the mean would decrease.
   C) the median would increase.
   D) the median would decrease.

70. A snack bar sells 5 items with a mean (average) price of $0.60, as shown below.

<table>
<thead>
<tr>
<th>Snack Menu</th>
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<tbody>
<tr>
<td>Chips $0.50</td>
</tr>
<tr>
<td>Juice $0.80</td>
</tr>
<tr>
<td>Apple $0.60</td>
</tr>
<tr>
<td>Candy $0.70</td>
</tr>
<tr>
<td>Gum $0.40</td>
</tr>
</tbody>
</table>

Which pair of items could be added to the menu without changing the average price?
   A) Banana ($0.60) and Soda ($0.75)
   B) Banana ($0.60) and Cookie ($0.50)
   C) Energy Bar ($0.45) and Cookie ($0.50)
   D) Energy Bar ($0.45) and Soda ($0.75)

71. Marguerite earned a score between 75 and 89 on all of her previous spelling tests. She earned a score of 100 on her next test. Which of the following statements is true?
   A) The mode will increase.
   B) The mean will increase.
   C) The mean will decrease.
   D) The median will decrease.
Wendy wants to take a survey to determine which flavor of ice cream is the most popular at her school. Which of the following methods is the best way for her to choose a random sample of the students at her school?

A. selecting ten students from each homeroom
B. selecting members of the girls’ softball team
C. selecting members of the boys’ basketball team
D. selecting students who like her favorite flavor of ice cream

Celia has a large container in which four different kinds of coins are thoroughly mixed. She wants to take a sample of her coins to estimate which kind of coin she has the most. Which of the following methods is the best way for her to select a sample?

A. taking one coin from the container
B. taking coins until she has one of every kind
C. taking ten coins of each type from the container
D. taking thirty coins out of the container without looking

Emil wants to find out the most popular football team at a game between the home team and the visiting team. Which of the following methods will give him the most accurate results?

A. surveying the cheerleaders for the home team
B. surveying people wearing hats for the visiting team
C. surveying a group of people standing in line for tickets
D. surveying people who do not live in the home team’s city

The table shows the annual profit for five companies.

<table>
<thead>
<tr>
<th>Company</th>
<th>Profit</th>
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<td>I</td>
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<tr>
<td>II</td>
<td>$275,000</td>
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<tr>
<td>III</td>
<td>$250,000</td>
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<tr>
<td>IV</td>
<td>$325,000</td>
</tr>
<tr>
<td>V</td>
<td>$300,000</td>
</tr>
</tbody>
</table>

Which statement is valid about the annual profits of these five companies?

A. Companies II and V made the same profit.
B. No company made less than $275,000 profit.
C. No company made more than $300,000 profit.
D. Company IV made $75,000 more profit than Company III.
76. Ms. Hatley is going to choose one person from each of the two lists below to represent the class in student council.

<table>
<thead>
<tr>
<th>List 1</th>
<th>List 2</th>
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<tbody>
<tr>
<td>Ann</td>
<td>Dave</td>
</tr>
<tr>
<td>Carlos</td>
<td>Mia</td>
</tr>
</tbody>
</table>

Which set shows all the possible choices of two people?

A. \{(Ann, Carlos), (Ann, Lisa)\}
B. \{(Ann, Dave), (Ann, Mia)\}
C. \{(Ann, Dave), (Carlos, Mia), (Lisa, Dave), (Lisa, Mia)\}
D. \{(Ann, Dave), (Ann, Mia), (Carlos, Dave), (Carlos, Mia), (Lisa, Dave), (Lisa, Mia)\}

77. A store is selling USA Spirit T-shirts. The shirts are available in red, blue, and white. Shirts of each color are available in sizes small, medium, large, and extra large.

Aimee will randomly select one shirt from a shelf. If the shelf contains equal numbers of shirts in each color and size combination, what is the probability that Aimee will select a large shirt?

A. \(\frac{1}{12}\)
B. \(\frac{1}{4}\)
C. \(\frac{1}{3}\)
D. \(\frac{11}{12}\)
78 The table shows how many T-shirts of each color Paul has in his closet.

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<th>Color</th>
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<tr>
<td>Red</td>
<td>4</td>
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<td>White</td>
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<tr>
<td>Blue</td>
<td>8</td>
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<tr>
<td>Total</td>
<td>20</td>
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</tbody>
</table>

If Paul chooses a T-shirt without looking, what is the probability that it will be blue?

A 4%
B 8%
C 40%
D 60%

79 Mason has 10 black, 12 white, and 3 brown pairs of socks in one drawer. What is the probability that, without looking, Mason will pick a brown pair of socks from the drawer?

A 4%
B 12%
C 14%
D $33\frac{1}{3}$%
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