This practice exam mirrors your real exam except that the cumulative is completely multiple choice. Some questions do not require work but most do. Please take the effort necessary to show good work. Make yourself proud by making good choices that help you be a better student.

1. Which of the following shows 160 as a product of its prime factors?
   a. $2 \times 8 \times 10$  
   b. $2 \times 2 \times 2 \times 2 \times 5$  
   c. $2 \times 4 \times 4 \times 5$  
   d. $2 \times 2 \times 2 \times 2 \times 2 \times 5$

2. What does “squared” mean in terms of exponents?
   a. Multiply by 2  
   b. Start by drawing a square and then determine the length of the sides  
   c. Multiply a number by itself  
   d. Good question, I should ask my teacher!

3. Which symbol makes the statement true?
   $$\left| 15 \right| \ ? \ -12$$
   a. $<$  
   b. $>$  
   c. $=$  
   d. $\geq$

4. What is the value of $\frac{3}{4} \div \frac{6}{7}$?
   a. $\frac{9}{14}$  
   b. $\frac{7}{8}$  
   c. $1 \frac{1}{7}$  
   d. $1 \frac{17}{28}$

5. What is the value of $35.93 \times 1.07$?
   a. 0.029  
   b. 34.83  
   c. 36.97  
   d. 38.4451

6. Which of the following ratios is equivalent to 60 : 72?
   a. 5 : 8  
   b. 10 : 12  
   c. 15 : 12  
   d. 75 : 108

7. The ratio of the weight of a book to the weight of a mug is 7 : 5. What fraction of the total weight of the book and mug is the weight of the book?
   a. $\frac{5}{12}$  
   b. $\frac{7}{12}$  
   c. $\frac{5}{7}$  
   d. $1 \frac{2}{5}$
8. A basket contains $\frac{3}{8}$ as many oranges as apples and $\frac{3}{4}$ as many oranges as pears. What is the ratio of the number of oranges to the total number of fruits in the basket?
   a. 1 : 4  
   b. 1 : 5  
   c. 3 : 10  
   d. 3 : 18

9. To make orange paint, Pedro mixes red paint and yellow paint in the ratio 3 : 2. If he uses 8.5 gallons of yellow paint, how many gallons of red paint does he use?
   a. 4.25 gallons  
   b. 12.75 gallons  
   c. 21.25 gallons  
   d. 25.5 gallons

10. Ben can type 150 words in 3 minutes. How many words can he type in 2 minutes?
    a. 50  
    b. 100  
    c. 200  
    d. 300

11. A steel rod cost $1.25 per inch. How much will 2 feet of the steel rod cost?
    a. $2.50  
    b. $15  
    c. $25  
    d. $30

12. Which of the following is not equivalent to 36%?
    a. 18 out of 50  
    b. $\frac{1}{2}$ of 72%  
    c. $\frac{8}{25}$  
    d. 0.36

13. An art teacher had $\frac{2}{3}$ gallon of paint to pour into containers. If he poured $\frac{1}{8}$ gallon of paint into each container until he ran out of paint, how many containers had paint in them, including the one that was partially filled?
    a. 1  
    b. 3  
    c. 5  
    d. 6

14. Last year, Anne made 32 one-cup servings of soup for a school party. This year, she will make two times the amount of soup that she made last year. How many gallons of soup will Anne make this year?
    a. 64  
    b. 16  
    c. 4  
    d. 2
15. Arnold’s entire workout consisted of 20 minutes of warm-up exercises, 50 minutes of lifting weights, and 30 minutes on the treadmill. What was the ratio of the number of minutes he lifted weights to the total number of minutes of his entire workout?
   a. 1 : 1  
   b. 1 : 2  
   c. 3 : 10  
   d. 5 : 8

16. Wyatt hiked 5 miles in 1.5 hours. At this same rate, what is the total number of miles Wyatt could hike in 9 hours?
   a. 3 miles  
   b. 2.7 miles  
   c. 27 miles  
   d. 30 miles

17. A group of students organized a car wash to raise money for a local charity. The students charged $5.00 for each car they washed. In 3 hours, they washed 12 cars. At that rate, how much money could they earn from washing cars for eight hours?
   a. $32  
   b. $96  
   c. $85  
   d. $160

18. Point M represents the opposite of $-\frac{1}{2}$ and point N represents the opposite of $\frac{5}{2}$. Which number line correctly shows points M and N?

19. Madison and Pedro each created a number pattern that began with the number 0.
   - Madison used the rule “Add 4.”
   - Pedro used the rule “Add 12.”

Which statement is true about each corresponding pair of numbers in the two patterns?
   a. Each number in Pedro’s pattern is 8 less than the corresponding number in Madison’s pattern.
   b. Each number in Pedro’s pattern is 8 more than the corresponding number in Madison’s pattern.
   c. Each number in Pedro’s pattern is 3 times less than the corresponding number in Madison’s pattern.
   d. Each number in Pedro’s pattern is 3 times more than the corresponding number in Madison’s pattern.
20. What is the greatest common factor of 56 and 92?
   a. 2  
   b. 4  
   c. 7  
   d. 8

21. A company paid $48 for 2 cases of printer paper. Each case contained 12 packages of paper. Next month the company’s office manager needs to order 180 packages of the same paper. If the price per package does not change, what would be the total cost of next month’s order?
   a. $90  
   b. $360  
   c. $720  
   d. $1,140

22. The picture below shows the five houses on Maple Street and the five houses on Oak Street.

   ![Maple Street and Oak Street houses]

   - Each house number on Maple Street is six more than the house number to its left.
   - Each house number on Oak Street is eight more than the house number to its left.

   How much greater is the house number of the last house on Oak Street than the house number of the last house on Maple Street?
   a. 2  
   b. 6  
   c. 8  
   d. 10

23. Keith wants to plot −8 and −9 on a number line. Which statement is true?
   a. Keith should plot −8 to the left of −9 because −8 < −9.
   b. Keith should plot −8 to the left of −9 because −8 > −9.
   c. Keith should plot −9 to the left of −8 because −9 < −8.
   d. Keith should plot −9 to the left of −8 because −9 > −8.

24. What is the value of the expression below?
   \[3^4 + 9\]
   a. 21  
   b. 39  
   c. 43  
   d. 90
25. Felicity babysat 2 hours each night for 10 nights. She earned a total of $180 babysitting. Felicity wants to calculate her hourly rate. How much did Felicity earn per hour babysitting?
   a. $9               c. $18
   b. $15              d. $20

26. The machines S and T were both cleaned this week.
   - Machine S is cleaned every 12 weeks.
   - Machine T is cleaned every 8 weeks.

   What is the fewest number of weeks that will pass before both machines are cleaned again in the same week?
   a. 16               c. 36
   b. 24              d. 48

27. Last year the girls’ basketball team had 8 fifth-grade students and 7 sixth-grade students. What was the ratio of sixth-grade students to fifth-grade students on the team?
   a. 8 : 15           c. 7 : 8
   b. 8 : 7            d. 15 : 8

28. The table below shows how much money a grocery store receives for selling different amounts of asparagus.

<table>
<thead>
<tr>
<th>Number of Pounds</th>
<th>Total Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>$10</td>
</tr>
<tr>
<td>6</td>
<td>$15</td>
</tr>
<tr>
<td>8</td>
<td>$20</td>
</tr>
<tr>
<td>10</td>
<td>?</td>
</tr>
<tr>
<td>12</td>
<td>?</td>
</tr>
</tbody>
</table>

If the unit rate is constant, what are the total sales for 12 pounds of asparagus?
   a. $22.50           c. $30
   b. $25              d. $32.50

29. In a certain month, a city recorded a maximum temperature of 12°C and a minimum temperature of -22°C. What is the temperature difference?
   a. 10°C            c. 34°C
   b. -34°C           d. 24°C
30. Which expression does the diagram below model?

![Diagram showing a rectangular area with dimensions 3 1/4 by 3/4]

a. \( \frac{3\frac{1}{4}}{\frac{3}{4}} \)

b. \( \frac{3}{4} \div 3\frac{1}{4} \)

c. \( 3 \div \frac{1}{4} \)

d. \( \frac{1}{4} \div 3 \)

31. Which number best represents the location of point E on the number line below?

![Number line with points marked at -2, -1, 0, 1]

a. -1.8

b. -1.6

c. -1.5

d. -1.3

32. Barry is using a coordinate plane to design a rectangular swimming pool. He will plot points on the coordinate plane to mark the vertices of the rectangular pool bottom. If Barry plots the first three points at (5, 3), (5, 13) and (30, 13), what would the coordinates of the fourth point be?

a. (30, 5)

b. (20, 13)

c. (5, 28)

d. (30, 3)

33. Which of the inequalities is true?

a. \(|157| < -|375|\)

c. \(|-157| > 375\)

b. \(|-375| > |-157|\)

d. \(|-375| < -157\)

34. What is the sum of \(|-12|\) and \(|9|\)?

a. -3

c. -21

b. 3

d. 21

35. Sam paid $8.28 for 18 stamps. At this rate, how much would it cost Sam to buy 12 stamps?

a. $2.19

c. $3.72

b. $2.28

d. $5.52
36. Residents of a small city voted on whether to allow a developer to build a shopping center. The number of votes in favor of the shopping center was 4,400. The number of votes against the shopping center was 17,600. What percent of the voters were in favor of building the shopping center?
   a. 20%   c. 40%
   b. 25%   d. 44%

37. Maddy had a piece of ribbon that was $3 \frac{1}{2}$ yards long. She used this ribbon to make bows. Each bow was made from a piece of ribbon that was $\frac{3}{4}$ yard long. This situation can be represented by the equation $3 \frac{1}{2} \div \frac{3}{4} = 4 \frac{2}{3}$. Which statement best describes what the quotient $4 \frac{2}{3}$ represents in the situation above?
   a. Maddy had bows that were each $4 \frac{2}{3}$ yards long.
   b. Maddy had $4 \frac{2}{3}$ yards of ribbon left after making the bows.
   c. Maddy made 4 bows from the piece of ribbon and had $\frac{2}{3}$ of a yard left.
   d. Maddy made 4 bows from the piece of ribbon and had enough left for $\frac{2}{3}$ of a bow.

38. A recipe for lemonade calls for 1 cup of sugar and 5 cups of water. How much sugar is used per cup of water?
   a. $\frac{1}{6}$ cup   c. $\frac{1}{4}$ cup
   b. $\frac{1}{5}$ cup   d. $\frac{5}{1}$ cup

39. What is $\frac{5}{6}$ as a decimal?
   a. 0.833   c. 1.2
   b. 0.83   d. 5.6

40. Mrs. Goldman’s dog eats 8 ounces of dog food each day. If Mrs. Goldman bought a 28-pound bag of dog food, how many 8-ounce servings are in the bag?
   a. 14   c. 224
   b. 56   d. 44
41. *You may use a calculator to help with the calculations on this problem*

The area of an airplane’s wings is related to the airplane’s lifting force, which holds the airplane in the air. The table below lists several wing area and the corresponding lifting forces.

<table>
<thead>
<tr>
<th>Area of Wings (square feet)</th>
<th>Lifting Force (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>1,875</td>
</tr>
<tr>
<td>150</td>
<td>2,250</td>
</tr>
<tr>
<td>175</td>
<td>2,625</td>
</tr>
<tr>
<td>250</td>
<td>3,750</td>
</tr>
<tr>
<td>x</td>
<td>5,625</td>
</tr>
<tr>
<td>420</td>
<td>y</td>
</tr>
</tbody>
</table>

The ratio of lifting force to the area is equivalent for all pairs in the table. What are the values of x and y?

a. x = 375 square feet and y = 7,500 pounds
b. x = 335 square feet and y = 7,500 pounds
c. x = 375 square feet and y = 6,300 pounds
d. x = 335 square feet and y = 6,300 pounds

42. The table below lists four masses and their corresponding approximate weights on Earth.

<table>
<thead>
<tr>
<th>Mass (kilograms)</th>
<th>Weight (Newtons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>196</td>
</tr>
<tr>
<td>50</td>
<td>490</td>
</tr>
<tr>
<td>x</td>
<td>1078</td>
</tr>
<tr>
<td>130</td>
<td>1274</td>
</tr>
<tr>
<td>140</td>
<td>1372</td>
</tr>
</tbody>
</table>

The ratio of the weight to mass is constant. Which statement describes the ratio of weight to mass and the value of x in the table?

a. The ratio is \( \frac{98}{10} \); x = 90
b. The ratio is \( \frac{98}{10} \); x = 110
c. The ratio is \( \frac{10}{98} \); x = 90
d. The ratio is \( \frac{10}{98} \); x = 110
43. What is the difference between Rounding and Estimating?
   a. They are basically the same thing.
   b. Estimating takes place at the end of a problem and rounding takes place at the beginning.
   c. Rounding takes place at the end of a problem and estimating takes place at the beginning.
   d. Good question, I should ask my teacher!

44. Classify: $-6 \frac{1}{2}$
   a. Natural, whole, integer, rational & real
   b. Integer, rational & real
   c. Rational & real
   d. Irrational & real

45. Classify: 12
   a. Natural, whole, integer, rational & real
   b. Integer, rational & real
   c. Rational & real
   d. Irrational & real

46. The table below shows different possibilities for the number of games a team would need to win to maintain a certain percentage of wins. Which ratio of the number of games won to the number of games played could also be included in this table.

   a. 18 : 20
   b. 30 : 20
   c. 18 : 30
   d. 50 : 30

<table>
<thead>
<tr>
<th>Number of Games Won</th>
<th>Number of Games Played</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>24</td>
<td>40</td>
</tr>
<tr>
<td>36</td>
<td>60</td>
</tr>
<tr>
<td>42</td>
<td>70</td>
</tr>
</tbody>
</table>

47. Classify: $\varphi$
   a. Whole, integer, rational & real
   b. Integer, rational & real
   c. Rational & real
   d. Irrational & real
48. The summit of a volcano is 10 kilometers (km) above the ocean floor, as shown below.

If the ocean floor has an elevation of -5 kilometers, which statement describes the elevation of sea level and the summit?

a. The elevation of sea level is 0 km and the elevation of the summit is 5 km.
b. The elevation of sea level is 5 km and the elevation of the summit is 5 km.
c. The elevation of sea level is 0 km and the elevation of the summit is 10 km.
d. The elevation of sea level is 5 km and the elevation of the summit is 10 km.

49. Ms. Theall leads 12 hours of poetry writing sessions at White Plains Library each month. Each session lasts \(\frac{2}{3}\) hour. How many sessions does Ms. Theall lead in a month?

   a. 8  c. 18
   b. 10  d. 20

50. Point A and point B are placed on a number line. Point A is located at -20 and point B is 5 less than point A. Which statement about point B is true?

   a. It is located at -25 and is to the right of point A on the number line.
   b. It is located at -15 and is to the right of point A on the number line.
   c. It is located at -25 and is to the left of point A on the number line.
   d. It is located at -15 and is to the left of point A on the number line.
51. Two vertices of a right triangle ABC are shown on the coordinate plane. Which point could represent vertex C of right triangle ABC?

a. (1, 2)       c. (-1, 2)
b. (2, -1)       d. (-2, 1)

Short Response

52. Use the coordinate plane below.

a. Give the coordinates of point A and B.
b. Plot points C(-2, 4) and D(5, -3) on the coordinate plane.
c. Point C and P are reflections of each other about the y-axis. Give the coordinates of P.
53. Use the coordinate plane below.
   a. Plot points J(-2, 4), K(3, 4), L(5, -2) and M(-2, -2) on the coordinate plane. Then connect the points in order with line segments to form a closed figure. Name the figure formed.
   b. Find the lengths of $\overline{JK}$ and $\overline{JM}$.

54. $15 \frac{2}{3} + 8^2 \times \left(12 \frac{1}{2} + 9 \frac{1}{3}\right)$

55. $4^3 + 9 \frac{1}{4} \times 5 - 6 \frac{1}{2}$
56. Points $R$ and $S$ are reflections of each other about the $y$–axis. What are the coordinates of point $S$ if point $R$ is located at $(-4, 1)$. Connect the two points to form a line segment.

Fill in the blanks:

57. $320\%$ expressed as a mixed number in simplest form is __________

58. $9\%$ expressed as a decimal is __________

59. $\frac{62}{120}$ expressed as a percent rounded to the nearest whole number is __________

60. $65.25\%$ expressed as a fraction in lowest terms is __________