

2018 6th Grade Math Contest

- Find the smallest of the three consecutive positive numbers whose squares add up to 974.
 - 15
 - 16
 - 17
 - 18
 - Nosolution
- Which of the expressions below match the following actions: "Start with the unknown quantity of z . Add 2. Then multiply by 4. Subtract that product from the quantity of the sum of 5 and 8. Divide that difference by 3."
 - $z + 2 \times 4 - 5 + 8 \div 3$
 - $(z + 2) \times 4 - (5 + 8) \div 3$
 - $z + 2 \times 4 - (5 + 8) \div 3$
 - $((5 + 8) - (z + 2) \times 4) \div 3$
 - $((z + 2) \times 4 - (5 + 8)) \div 3$
- Alice and Bob counted the money in each of their piggy banks. Alice then said to Bob, "Bob, if you give me \$13, we would both have the same amount." To this Bob replied, "Well Alice, if you give me \$17, I would have twice as much as you have." How much money did Alice and Bob have when they first counted?
 - Alice = \$58, Bob = \$84
 - Alice = \$77, Bob = \$103
 - Alice = \$82, Bob = \$108
 - Alice = \$103, Bob = \$77
 - None of the above
- The denominator of a fraction is 4 times the numerator. If 7 is subtracted from the numerator, and 8 is added to the denominator, the fraction becomes $\frac{1}{13}$. What is the denominator of the original fraction?
 - 47
 - 42
 - 49
 - 44
 - 15
- If 12 more than 5 times a number is 14 less than $\frac{2}{3}$ the number, find the number.
 - 6
 - 7
 - 8
 - 9
 - 9

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6. Of the 625 farm animals on a ranch, 44% are cattle, and 28% of the cattle are longhorns. How many longhorns are on the ranch?
- A. 66
 - B. 77
 - C. 88
 - D. 99
 - E. 101
7. For a fundraiser, 36 students contributed \$14 each. When 4 more students contributed (each the same amount), the average contribution jumped to \$15. What did each of these 4 students contribute?
- A. \$1
 - B. \$14
 - C. \$15
 - D. \$20
 - E. \$24
8. Angles A and B are supplementary, while angles C and D are complementary. If the measure of angle A is 43° , and measure of angle D is 28° , what is the difference in the measures of angles B and C ?
- A. 15°
 - B. 75°
 - C. 129°
 - D. 185°
 - E. 199°
9. The area of a circle increased from 6π square meters to 8π square meters. How much did the radius change (approximately)?
- A. 0.18 meters
 - B. 0.38 meters
 - C. 1.41meters
 - D. 1.96 meters
 - E. 6.28 meters
10. A right triangle whose hypotenuse is 26 m , and one side is 10 m , needs to be painted. If it costs \$2 per square meter to paint, what would be the total cost to paint the triangle?
- A. \$520
 - B. \$260
 - C. \$480
 - D. \$240
 - E. \$250

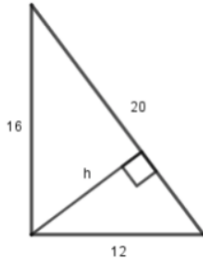
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11. The original price of a jacket was \$125. The manager of the store marked it up by 20%, and then sold it by offering a discount of 20%. What price did the manager sell the jacket for?

- A. \$125
- B. \$100
- C. \$120
- D. \$150
- E. \$30

12. In the diagram below, there are three right triangles. Find the length of h .

- A. 8.2
- B. 9.2
- C. 9.6
- D. 11.6
- E. 15



13. Which inequality is represented by the given number line?



- A. $x < -1$
- B. $x \leq -1$
- C. $x > -1$
- D. $x \geq -1$
- E. $x = -1$

14. John cleans his room every 6th day. Dimitri cleans his room every 8th day. Deandre cleans his room every 10th day. If they all clean their room today, how many days will it be before they all three clean their rooms on the same day again?

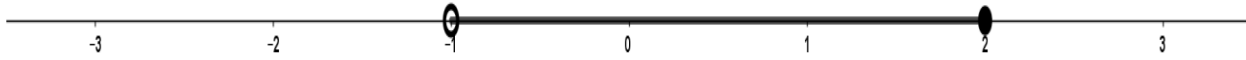
- A. 480
- B. 48
- C. 80
- D. 120
- E. 240

15. How many square centimeters (cm^2) are in 1 square meter (m^2)?

- A. 10
- B. 100
- C. 1,000
- D. 10,000
- E. 100,000

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16. Which compound inequality is represented by the given number line?



- A. $-1 \leq x \leq 2$
- B. $-1 < x < 2$
- C. $-1 \leq x < 2$
- D. $-1 > x \geq 2$
- E. $-1 < x \leq 2$

17. If a recipe calls for $\frac{3}{4}$ cup of rice and $\frac{1}{3}$ cup of water, what is the ratio rice to water without using fractions?

- A. 9 cups of rice to 4 cups of water
- B. 4 cups of rice to 9 cups of water
- C. 6 cups of rice to 5 cups of water
- D. 5 cups of rice to 1 cup of water
- E. 5 cups of rice to 6 cups of water

18. If John bicycled 9 laps each day, 9 miles each lap, for 9 days, how many total miles did he bike?

- A. 3^8 miles
- B. 3^6 miles
- C. 3^9 miles
- D. 999 miles
- E. 3^{27} miles

19. The total cost of buying 8 drinks, 8 popcorns, and 3 candy bars is the same as buying 4 drinks, 4 popcorns, and x candy bars. If the drinks, popcorn, and candy bars cost \$6, \$5, and \$4 each, respectively, what is x ?

- A. 11
- B. 12
- C. 13
- D. 14
- E. 19

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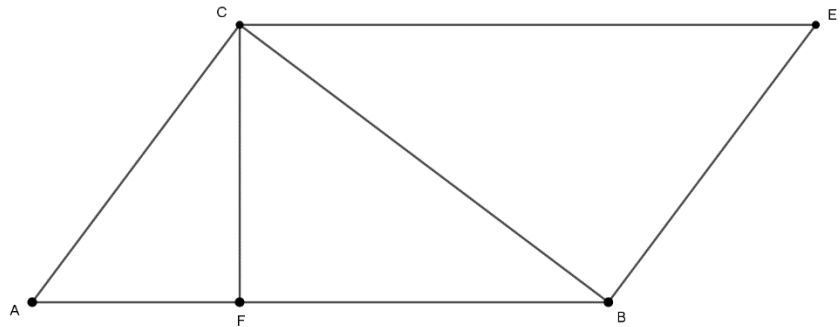
20. Students in a school were surveyed for their favorite color. Half of them chose red, $\frac{1}{4}$ chose blue, $\frac{1}{8}$ chose green, $\frac{1}{16}$ chose purple, $\frac{1}{32}$ chose yellow, and the rest chose orange. If 8 students chose orange, how many students were surveyed?

- A. 244
- B. 256
- C. 276
- D. 286
- E. 512

In the parallelogram $ABEC$ below, $AC = BE = 3$, $BC = 4$, $AB = CE = 5$, and $m\angle ACB = m\angle EBC = m\angle AFC = 90^\circ$. Also, $\triangle ABC \sim \triangle ACF$. Answer questions 21 and 22.

21. What is the area of $ABEC$?

- A. 6 square units
- B. 12 square units
- C. 15 square units
- D. 24 square units
- E. 36 square units



22. What is the length of CF ?

- A. 6 units
- B. $\frac{6}{5}$ units
- C. 12 units
- D. $\frac{12}{5}$ units
- E. 3 units

23. A sequence of numbers is as follows: $\frac{2}{3}, \frac{5}{9}, \frac{8}{27}, \frac{11}{81}, \dots$. If the pattern continues, what is the next number in the sequence?

- A. $\frac{14}{108}$
- B. $\frac{16}{123}$
- C. $\frac{14}{243}$
- D. $\frac{16}{253}$

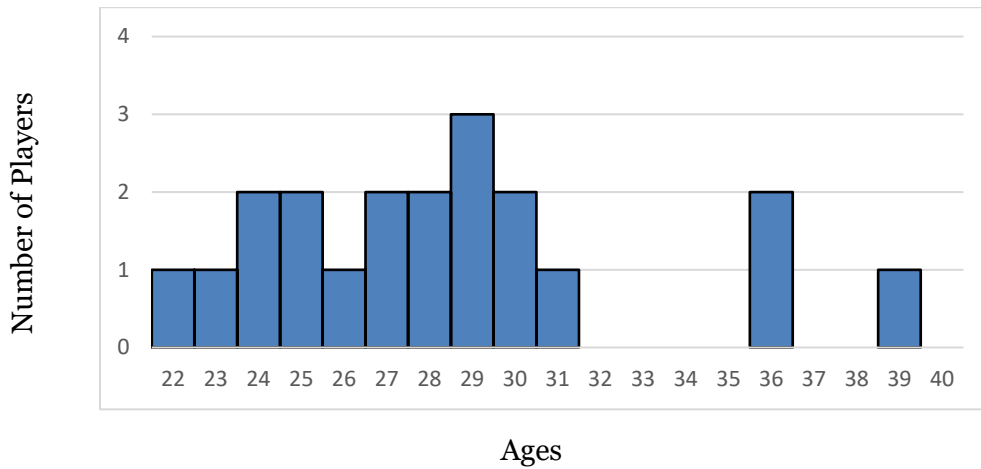
E. It is impossible to tell.

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24. Alice is x years old, and her sister, Britney, is 8 years older. Their mom is twice as old as Britney, and their uncle is x years older than their mom. If the total age of Alice, Britney, mom, and uncle is 131 years, how old is Britney?

- A. 13
- B. 14
- C. 15
- D. 16
- E. 21

Use the graph of the ages of the players on a minor league baseball team to answer questions 25 and 26.



25. What is the range of the age of the players?

- A. 12
- B. 17
- C. 20
- D. 29
- E. 3

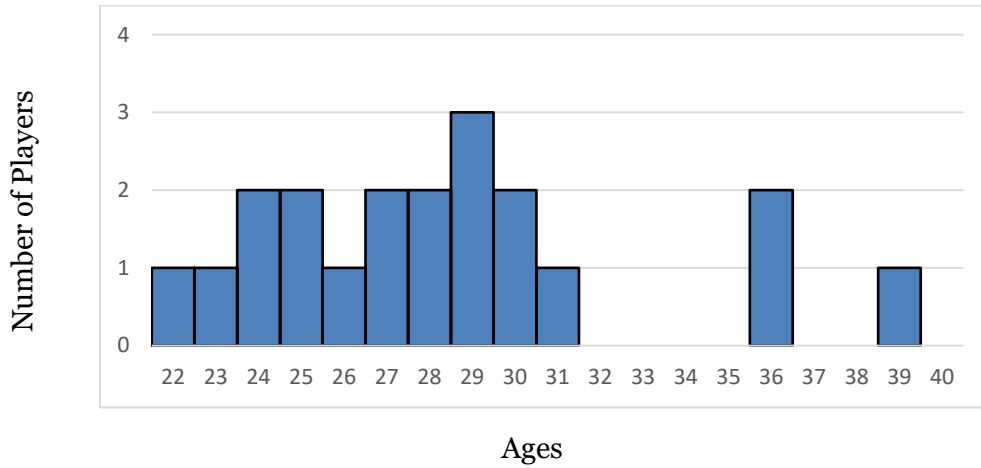
26. Which of the following is the calculation for the mean age of the players on the team?

- A. $\frac{22+23+24+25+26+27+28+29+30+31+36+39}{12}$
- B. $\frac{22+23+24+25+26+27+28+29+30+31+36+39}{20}$
- C. $\frac{22 \times 1 + 23 \times 1 + 24 \times 2 + 25 \times 2 + 26 \times 1 + 27 \times 2 + 28 \times 2 + 29 \times 3 + 30 \times 2 + 31 \times 1 + 36 \times 2 + 39 \times 1}{12}$
- D. $\frac{22 \times 1 + 23 \times 1 + 24 \times 2 + 25 \times 2 + 26 \times 1 + 27 \times 2 + 28 \times 2 + 29 \times 3 + 30 \times 2 + 31 \times 1 + 36 \times 2 + 39 \times 1}{20}$

E. It is impossible to find the mean age from the graph.

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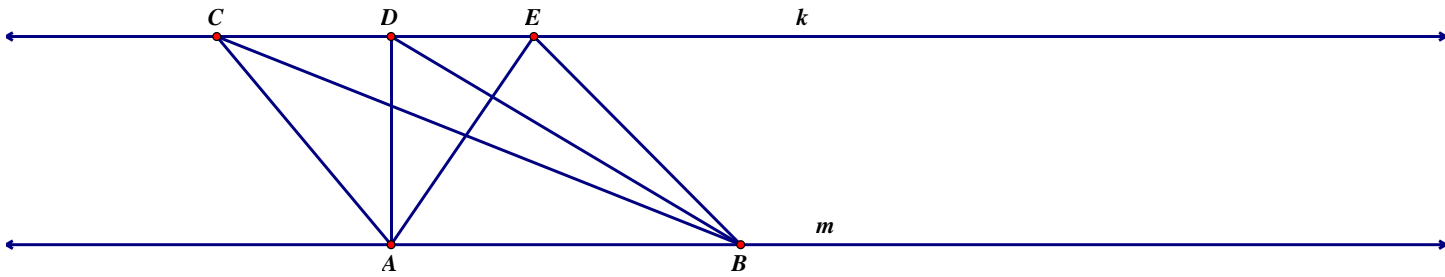
Use the graph of the ages of the players on a minor league baseball team to answer questions 27 through 29.



27. What is the median age of the players on the team?
- A. 27
 - B. 27.5
 - C. 28
 - D. 1.5
 - E. 3
28. What is the ratio of players below the age of 26 to the players above the age of 30?
- A. 3 to 2
 - B. 2 to 3
 - C. 7 to 6
 - D. 6 to 7
 - E. 4 to 3
29. What percent of the team is under the age of 25?
- A. 20%
 - B. 25%
 - C. 30%
 - D. 70%
 - E. 80%

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30. In the figure below, lines m and k are parallel. Which of the triangles listed has the greatest area?



- A. $\triangle ABC$
- B. $\triangle ABD$
- C. $\triangle ABE$
- D. $\triangle ABC$, $\triangle ABD$, and $\triangle ABE$ all have equal areas.
- E. There is not enough information to be able to tell which triangle has the greatest area.