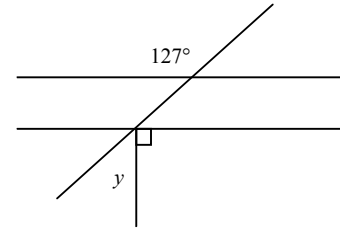


Franklin Math Bowl 2009 Eighth Grade Exam

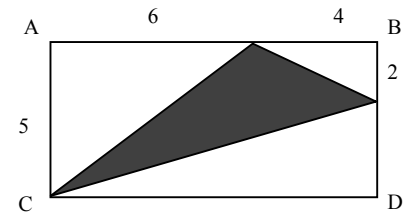
(Warning: Drawings on this test not to scale!)

- Find $m\angle y$.
 A) 53° B) 127° C) 45°
 B) 37° E) 90°
- What percent of 592 is 74?
 A) 0.125% B) 12.5% C) 20%
 B) 16% E) 1.25%



- $ABCD$ is a rectangle. Find the shaded area. (All units are in cm.)

- A) 15 cm^2 B) 8 cm^2 C) 16 cm^2
 D) 25 cm^2 E) 20 cm^2



- Evaluate this expression: $(a + b)^c - (b - c + 1)^{-a}$ for $a = 3, b = 4, c = -2$
 A) $\frac{6}{343}$ B) $\frac{167}{10589}$ C) -167 D) 48.997 E) -342.98
- If an airport has a runway that was originally x meters wide and y meters long. Now, they lengthened the runway by 50 m. How can you express the total area of the renovated runway in terms of x and y ?
 A) $y(y+50)$ B) $50y+xy$ C) x^2+50^2 D) $x(xy+50)$ E) $x(y+50)$
- John goes to the gym every 2 days, and Adam goes to the gym every 3 days. If they both go to the same gym on the 1st of September for the first time, and assume the gym opens everyday of the month, neither one of them did not miss any gym sessions, and they go at the same time of the day, how many times would they see each other in the gym?
 A) 2 B) 3 C) 4 D) 5 E) 6
- Below are the scores for Amanda's science class:
 1st Six weeks 96
 2nd Six weeks 97
 3rd Six weeks 92
 Exam ?
 Final Grade 95

If each six weeks' grade is worth 30% toward the final grade and the exam grade is 10% of the final grade, what would be her exam grade?

- A) 92 B) 95 C) 86 D) 90 E) 98

8. The unit ft^3/min would be appropriate for measuring which of the following?
 A) Rate of water that flows out of the faucet
 B) How much water a kiddie pool can hold
 C) The rate of exhaust emission for a truck
 D) A&C
 E) A&B
9. In base three you count 1, 2, 10, 11, 12, 20, 21, 22, 100, 101, etc. What is the base ten equivalent for the base three number 122?
 A) 8 B) 14 C) 25 D) 17 E) 26

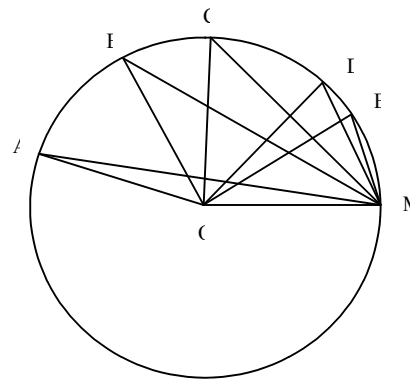
10. $\frac{1 \times 2 \times \dots \times 18}{1 \times 2 \times \dots \times 15} = ?$

- A) 4896 B) 73440 C) 306 D) 288 E) 1.2

11. In the equation $x^2 - 3x = 4$, solve for x .
 A) $\{-1, -4\}$ B) $\{-1, 4\}$ C) $\{1, 4\}$
 D) $\{-1\}$ E) $\{4\}$

12. Which triangle has the least area? O is the center of the circle.

- A) $\triangle AOM$
 B) $\triangle BOM$
 C) $\triangle COM$
 D) $\triangle DOM$
 E) $\triangle EOM$



13. For the word “Teeter”, how many different ordered arrangements (permutations) of the letters of this word exist?

- A) 720 B) 120 C) 360 D) 60 E) 30

14. There are 25 marbles in a bag: 5 are blue, 12 are red, and 8 are yellow. If a marble is drawn out of a bag and never returned, what is the probability of drawing a blue 2 twice in a row? (Round to 3 decimal places.)

- A) 0.033 B) 0.333 C) 0.032 D) 0.040 E) 0.067

15. $\frac{3}{5}$ of Andy’s money is the same as twice of Sarah’s. If Andy has \$60, how much does Sarah have?

- A) 36 B) 15 C) 18 D) 24 E) 20

16. If Chris and Peggy are 30 mi. apart, and they are traveling toward each other on the same road. If Chris is traveling at 22 mph and Peggy is traveling 37 mph, at what time (rounded to the nearest minute) will they pass each other?

- A) 50 min. B) 31 min. C) 26 min. D) 22 min. E) 27 min.

17. For this set of data, which of the following are true?

4, 8, 18, 11, 7, 4

- i) The mean is greater than the median.
- ii) The mode is 4.
- iii) The median is 8.

- A) i only B) ii only C) i & ii D) i, ii, iii E) ii and iii

18. In a group of 30, there are 4 times more people who prefer orange juice to milk. How many people like milk in this group?

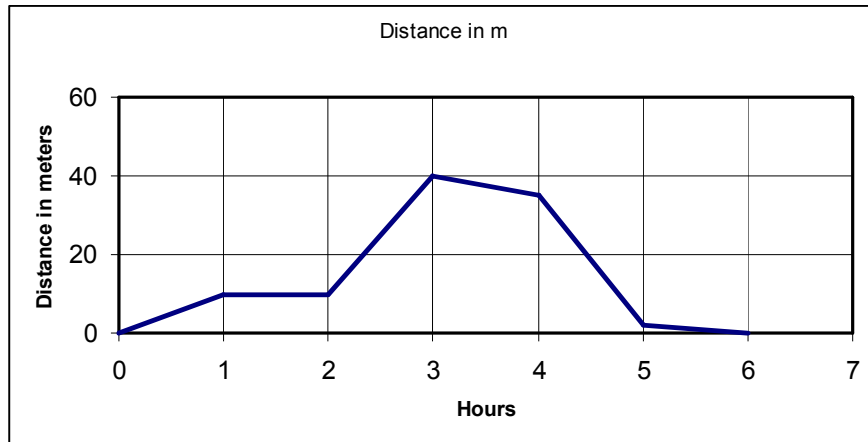
- A) 3 B) 6 C) 9 D) 12 E) 15

19. What's the next number in this sequence? 9, 11, 14, 19, 26,

- A) 28 B) 31 C) 33 D) 36 E) 35

For questions 20 and 21, refer to the chart below.

This graph describes the movement of a robot.



20. Between what hours did the object stop?
 A) 0 and 1 B) 1 and 2 C) 2 and 3 D) 3 and 4 E) 4 and 5
21. What statement or statements are true about the above graph?
 i) The robot moves towards the starting point between hours 4 and 5
 ii) The robot turns around at the 3rd hour.
 iii) The robot ends at a different location than it starts
 A) i only B) ii only C) iii only D) i and ii E) i, ii and iii
22. On a map, $1\frac{3}{4}$ inch represents 15 miles. If two towns are 17 inches apart on the map, how far are they actually apart? Round to the nearest tenth of a mile.
 A) 145.7mi B) 204.0mi C) 128.6mi D) 165.1mi E) 204.0mi
23. The difference between the 2nd and 5th triangular number is 12. What would be the difference between the 3rd and 6th triangular number?
 A) 9 B) 12 C) 13 D) 15 E) 19
24. A triangle is drawn on a coordinate system. Its vertices are (0,4), (0,7), and (6,4). A larger triangle is drawn by multiplying each x - and y -coordinate by 2. How many times larger than the area of the larger triangle is the area of the smaller triangle?
 A) 3 B) 4 C) 5 D) 6 E) 8
25. In the drawing at right, the arc shown is a semicircle and the two straight sides are congruent, forming a 60° angle. The perimeter of the entire figure is $(4\pi + 16)$ cm. What is the radius of the semicircle?
 A) 4π cm B) 8π cm C) 4 cm
 D) 8 cm E) $\frac{8}{\pi}$ cm

