**Choose the letter of the correct answer. In all cases, E. NOTA means “none of these answers”.**

1. The 2014 Winter Olympics was officially known as the XXII Olympic Winter Games. XXII are the Roman numerals for this Olympic Game’s number. What number Olympic Games was this?

**A) 12 B) 21 C) 22 D) 202 E) NOTA**

2. Concession stand food is expensive at the Olympics! Hot dogs are $10.50, large drinks are $8.20 each, small drinks are $5.20 each, and popcorn is $9.25 per bag (assume all prices include tax). If Ashley wants to have a large drink and a hotdog while watching speed skating, how much must she pay?

**A) $13.40 B) $15.70 C) $18.70 D) $19.75 E) NOTA**

3. The amount of friction on a person’s skates, or amount of Newtons (N), is given by the coefficient of kinetic friction () times a person’s normal force. If Joanna has a normal force of 700 N and , what is the amount of friction pushing on Joanna’s skates?

**A) 705 N B) 350 N C) 35 N D) 3.5 N E) NOTA**



4. This is the official logo for the 2018 Winter Olympics (on the right). If you connect the points on the end of the star in the top right corner, what shape would it make?

**A) circle B) hexagon C) pentagon D) rectangle E) NOTA**

The U.S. team has the following places in all of the figure skating events:

1, 1, 1, 3, 6, 8, 10, 12, 14, 7, 3, 8, 2

(Use this data set for questions 5 and 6)

5. What is the range of these numbers?

**A) 13 B) 12 C) 5.85 D) 1 E) NOTA**

6. What is the mode of the previous places?

**A) 13 B) 12 C) 5.85 D) 1 E) NOTA**

7. The flag of the gold medalists of the women’s figure skating event is raised at the award ceremony. What is the area of the flag? Both the top and bottom of the flag are of equal length.

2 ft

2 ft

1 ft

3 ft

**A) 4 ft2 B) 6 ft2  C) 8 ft2 D) 10 ft2  E) NOTA**

8. Julia gets 2nd place in the women’s speed skating event. Which of the following is true about the number 2?

I. It is a prime number.

II. It is divisible by 2.

III. One of its multiples is 40754.

**A) I only B) II and III C) I and II D) III only E) NOTA**

9. Jack is watching the men prepare for the speed skating event, and wonders just how many ice skates there are on the rink. Each man has one pair of skates and Jack counts 12 men in the event. In addition, Jack notices a mysterious pair of skates on the rink with no owner. How many individual ice skates are on the rink?

**A) 26 B) 24 C) 13 D) 12 E) NOTA**

10. Oh no! Jaewon, Justin, and Chamara all received medals in the men’s singles figure skating event, but the gold (1st), silver (2nd), and bronze (3rd) medals have been mixed up. Use these clues to figure out the order in which they placed, from highest to lowest.

* Jaewon tripped in the beginning of his routine, which cost him the gold medal.
* Justin placed higher than at least one of the other boys.
* Chamara, the silver medalist, and the gold medalist went out for sushi after the event.

**A) Chamara, Justin, Jaewon B) Justin, Jaewon, Chamara   
C) Jaewon, Chamara, Justin D) Need more clues E) NOTA**

11. Approximate the surface of the Olympic ice rink to be a rectangle that is 200 feet long and 100 feet wide. A Zamboni is a machine used to smooth the surface of the ice rink. If it is able to smooth 500 square feetof ice per minute, how many minutes will it take to smooth the surface of the entire rink?

**A) 500 B) 400 C) 40 D) 4 E) NOTA**

12. Now, approximate ice rink to be a rectangular prism. The ice in the ice rink is 200 feet long, 100 feet wide, and 0.5 foot deep. What is the volume of ice in the ice rink?

**A) 100 ft3 B) 1000 ft3  C) 10000 ft3  D) 100000 ft3  E) NOTA**

13. Victoria, Amy, Jamie and Jennifer are competing in the women’s singles figure skating event. Victoria’s highest jump is inches, Amy’s highest jump is inches, Jamie’s highest jump is inches. Jennifer’s highest jump is inches. Whose jump was the highest?

**A) Amy B) Jamie C) Jennifer D) Victoria E) NOTA**

14. Cayle and Alberic are representing the U.S.A. in the pairs’ figure skating event. Alberic and Cayle start their routine together in the center of the rink. Cayle skates 3 feet directly to the front while Alberic skates 4 feet directly to the left. How far apart are Cayle and Alberic?

**A) 1 ft B) 5 ft C) 6 ft D) 7 ft E) NOTA**

15. Townsend is doing math to calm his nerves before his speed skating event. He is having trouble simplifying this expression. Simplify this expression for Townsend.

**A) B) C) D) E) NOTA**

16. Tommy gets a score of 64 on his figure skating routine, and Alan gets a score that is 75% of Tommy’s score. What is Alan’s score?

**A) 16 B) 48 C) 75 D) 80 E) NOTA**

17. The first four scores of the men’s figure skating event are added and the average is 80. A fifth score is added and the average score is now 78. What is the fifth score?

**A) 50 B) 70 C) 78 D) 80 E) NOTA**

18. If the words ICE SKATING repeat in an infinite pattern as shown below, what is the 2016th letter?

ICESKATINGICESKATINGICESKATING…

**A) A B) K C) S D) T E) NOTA**

19. Although he did not place, Brandon was proud of being able to skate in a perfect circle with a radius of 7 feet during his figure skating routine. What is the area of the circle that Brandon made?

7 ft

**A) 7 B) 49 C) 14 D) 49 E) NOTA**

20. The individual speed skating events at the Winter Olympics include the 500 meter, the 1000 meter, the 1500 meter, the 5000 meter, and the 10000 meter. If you were to skate in all of these events, how many kilometers would you be skating?

**A) 1.8 B) 18 C) 1800 D) 18,000 E) NOTA**

21. An ice rink is composed of two semicircles and a rectangle. Below is an ice rink and its proportions. How many feet does a skater need to skate if they go around it once? (Circumference of a circle = )

15 ft fee

**A) 69.25 B) 80 C) 97.1**

**D) 226.63 E) NOTA**

25 ft

22. I put 72 medals in a bag. Fourteen of them belong to Russia, 28 belong to China, 20 belong to the US, and 10 belong to Korea. If I stick my hand in and pull out a medal, what is the probability that it belongs to China?

**A) B) C) D) E) NOTA**

23. Three friends, Joanna, Jason, and Jamie, were very excited to be at the Winter Olympics. Unfortunately, they were so excited they fell onto the ice rink. Joanna slid across at 15 ft/minute, Jason slid across at 12 ft/minute, and Jamie slid across at 10 ft/minute. If the rink is 60 ft long, what is the sum of the minutes each of them spent sliding?

**A) 14 minutes B) 15 minutes C) 16 minutes D) 17 minutes E) NOTA**

24. Andrew wants to become a professional speed skater. Every day, he trains for 150 minutes. How many hours a week does he train?

**A) 15 hrs B) 16.5 hrs C) 17 hrs D) 17.5 hrs E) NOTA**

25. Kim Yuna, a Korean figure skater, is trying to bedazzle her skating costume. She needs to figure out how many rhinestones she'll have to use. Her coach tells her it is the 10th smallest prime number multiplied by . How many rhinestones will she need?

**A) 16 B) 368 C) 464 D) 496 E) NOTA**

26. Cynthia wants to watch the speed skaters but she arrives at the stadium too late! The guard at the entrance says she must solve an equation or else she can't go in. Help her

simplify the expression.

**A) 226 B) 114 C) -46 D) -94 E) NOTA**

27. Townsend is the best speed skater in the U.S.A., and he practices a lot! Nick, on the other hand, isn't. Townsend goes through 4 pairs of skates a week but Nick only goes through 1 pair of skates every three weeks. If Townsend uses 36 pairs of skates, how many does Nick use?

**A) 12 B) 11 C) 10 D) 9 E) NOTA**

28. One of the hardest jumps in an athlete's figure skating routine is the loopy jump. Tommy is practicing his loopy jumps for his figure skating routine. The first day, he did 55 loopy jumps. The second day, he was a little tired, and he did 54 loopy jumps. The day after, he did 52, then 49, and then 45. If this pattern continues, how many total loopy jumps will he have done by the day he does zero loopy jumps?

**A) 400 B) 385 C) 275 D) 105 E) NOTA**

29. How many figure skaters from the USA went to the 2014 Olympics? Hint: it is the largest factor of 30 that is odd.

**A) 5 B) 6 C) 9 D) 11 E) NOTA**

30. Which country has won the most Winter Olympic medals?

**A) Norway B) Russia C) Sweden D) USA E) NOTA**