

1. Welcome to the savanna! In order to enter, you must solve this simple problem. What is $9 + 10$?
 A. 21 B. -1 C. 19 D. 90 E. NOTA

2. Now that we're in the savanna, it's time to take a wildlife tour on the Algebraic Explorer. To trick the visitors into paying him more, Nelson makes customers choose the equation whose value they will pay as a tour fee. He gives each visitor the same three choices:
 I. $2023 - 202 + 32 - 23 + 203 - 2020$
 II. $23(73 - 9 \cdot 7) \div 5$
 III. $(53 - 38) \div 25 + (2023 \div 289)$
 Which of the following is the cheapest tour fee (assume all equations are expressed in dollars)?
 A. I B. II C. III D. I and III are both the cheapest E. NOTA

3. Using the same tour fee choices from the last question, which of the choices would be the most expensive?
 A. I B. II C. III D. I and III are both the most expensive E. NOTA

4. Nelson finally sold out all the seats on the Algebraic Explorer and wants to see how well he tricked his customers. He sold 8 tickets from choice I, 11 tickets from choice II, and 5 tickets from choice III. How much did Nelson make from this tour?
 A. \$648 B. \$656 C. \$644 D. \$636 E. NOTA

5. As you are finding your seat on the Algebraic Explorer, you notice the walls are covered by multiple drawings of the number zero. To which of the following set(s) does zero belong to?
 I. Whole numbers
 II. Natural numbers
 III. Prime numbers
 IV. Integers
 A. II only B. II and IV only C. I, II, and III only D. I and III only E. NOTA

6. The wildlife tour is about to start! The time is currently 11:39 AM and the wildlife tour is set to start at 11:45 AM. Unfortunately, the Algebraic Explorer's engine and air conditioning just broke down and the tour can't start! The only mechanic near the savanna is Roger, who is 4 miles away from the Algebraic Explorer. Roger runs at a constant pace of 12 miles per hour to get to the algebraic explorer by the shortest route. If it takes Roger 19 minutes to fix the engine and 28 minutes to fix the air conditioning, how many minutes late is the start of the wildlife tour? Assume the tour starts the moment that Roger finishes fixing the Algebraic Explorer.
 A. 227 B. 67 C. 221 D. 61 E. NOTA

7. While waiting for the air conditioning to get fixed, the passengers in the Algebraic Explorer start complaining about the heat inside. Hadriel and Shawn who work as tour guides show the passengers that there is a completely filled water bottle underneath each of the 24 seats on the Algebraic Explorer. Each water bottle is shaped as a cylinder with radius 2 inches and height 1 foot. What is the total volume of all the water in these bottles?
 A. $96\pi \text{ in}^3$ B. $576\pi \text{ in}^3$ C. $1152\pi \text{ in}^3$ D. $2304\pi \text{ in}^3$ E. NOTA

8. Yiyan looks out the window and sees two giraffes! If one giraffe is three times as tall as half the height of the other giraffe, and the taller giraffe has a height of 18 feet, what is the height of the other giraffe in feet?
 A. 6 B. 9 C. 12 D. 14 E. NOTA

9. On the other side of the Algebraic Explorer, a herd of five elephants walks by. A sixth elephant then joins them. If the first five elephants have an average trunk length of 6.2 feet, and the sixth elephant has a trunk of length 6.8 feet, what is the average trunk length for all six elephants in feet?
- A. 6.3 B. 6.4 C. 6.6 D. 7.0 E. NOTA
10. The Algebraic Explorer is finally starting the tour. If it is moving on the path $y = 11x + 43$ and there is a continuous river on $y = 17x - 35$, what is the x -value where the path intersects the river?
- A. -13 B. -2 C. 2 D. 13 E. NOTA
11. The AC broke down again and Aaron and Shaoyang can't stand it anymore! Enraged, they jump out of the van and run away from the savanna towards a troop of gorillas. The silverback will let them join the troop if they collect 616 bananas. Aaron can collect 4 bananas every 1.5 minutes, and Shaoyang can collect 15 bananas every 4 minutes. If they work together, how many minutes will it take them to collect the 616 bananas?
- A. 45 B. 60 C. 96 D. 124 E. NOTA
12. After collecting the bananas, Aaron, Shaoyang, and the gorillas stand in a circle around the pile of bananas to perform a ritual that will turn Aaron and Shaoyang into gorillas. If there are five gorillas and Aaron and Shaoyang must stand next to each other, how many distinct ways are there to arrange these seven individuals in a circle? (Assume that all gorillas are distinguishable from one another.)
- A. 120 B. 240 C. 720 D. 1440 E. NOTA
13. Now that Aaron and Shaoyang are gone, there are only 22 filled seats. It just happens that "22" is Minjun's favorite Taylor Swift song. If Minjun listens to "22" 22 times and "22" is 3 minutes and 51 seconds long, how long does Minjun listen to "22"?
- A. 66 mins, 51 secs B. 72 mins, 36 secs C. 78 mins, 39 secs D. 84 mins, 42 secs E. NOTA
14. James and Arib were exploring the Serengeti when a pack of hyenas emerged in the distance and started chasing them. If the Serengeti can be mapped as a Cartesian plane, with James and Arib's trajectory as the line $y = -0.5x + 2$ and the hyenas' trajectory as $y = -x + 7$, where will the lines intersect, with the hyenas catching up to James and Arib?
- A. $(-10, 3)$ B. $(10, -3)$ C. $(-3, 10)$ D. $(3, -10)$ E. NOTA
15. James and Arib were able to escape from the hyenas! To celebrate surviving their encounter, they decided to crack open their Prealgebra workbooks and isolate some variables. If you have 2 equations $3x + 6y = 24$ and $4x + 8y = 15$, what is x ?
- A. 14.8 B. 1.48 C. 1.2 D. 148 E. NOTA
16. Heewon and Yimo love swimming and decide to hold a relay race against two Hippos in the savanna's river. The race covers 1 mile and each team will tag in their second member after covering half a mile. Heewon, who is starting the race can swim at 440 feet/minute and the Hippo starting the race for his team can swim at 370 feet/minute. How far ahead (in feet) of the Hippo will Heewon be when he reaches half a mile? Note that here are 5280 feet in a mile.
- A. 280 B. 350 C. 420 D. 490 E. NOTA
17. Using the same information from the previous question, if Yimo swims at 8 miles per hour and the second hippo swims at 6 miles per hour, which team wins the race? Yimo and Heewon are representing Team Chiles while the Hippos represent Team Savanna.
- A. Team Savanna B. Team Chiles C. Both teams D. Neither team E. NOTA

18. While looking at the gazelles and leptoptilos, you begin to wonder. If you were to randomly select a letter from each of the words “gazelles” and “leptoptilos,” what is the probably you’d get a vowel both times?
- A. $6/35$ B. $3/22$ C. $12/77$ D. $8/55$ E. NOTA
19. Dale holds an ostrich race. If two ostriches are competing to complete 40 laps on a $\frac{1}{4}$ mile long track, and the first ostrich finishes in 10 minutes with the second taking 5 more minutes, how fast was the second ostrich running on average in miles per hour?
- A. 2.5 B. 4 C. 40 D. 60 E. NOTA
20. Kate the Giraffe can reach fruit anywhere exactly 26 feet away from where she stands. If Kate wants to eat fruit at the very top of a tree 24 feet tall, how far away from the base of the tree (in feet) should Kate stand to reach this point exactly?
- A. 2 B. 4 C. 8 D. 10 E. NOTA
21. Yimo wants to eat an African cichlid. Before he can eat the cichlid, he has to cook it. If the cichlid is at $70^{\circ}F$ and he cooks it to $175^{\circ}F$, how many minutes will it take Yimo to cook his cichlid if his campfire can only increase the temperature of the fish by $1.5^{\circ}F$ every 2 minutes?
- A. 30 B. 10 C. 140 D. 100 E. NOTA
22. Farhana and Katharine are working to assess the population change in mongooses on the Masai Mara Game Reserve. If there were 15 meerkat colonies with an average of 10 meerkats per colony in March, with 17 meerkats colonies with an average of 15 meerkats per colony in April, by how many individual meerkats did the population increase?
- A. 105 B. 85 C. 30 D. 150 E. NOTA
23. Shaoyang and James are snorkeling through the Congo river when they spot a Lungfish. Lungfish have lungs as suggested by their names and have to surface to breathe. If a Lungfish were to have a lung capacity of 1400 milliliters, and loses 100 milliliters of air every minute for the first 5 minutes of being submerged, and then 150 for every minute after, how long can a lungfish stay underwater for using one full breath in minutes?
- A. 12 B. 11 C. 16 D. 14 E. NOTA
24. Wes the Pigbroker is building a warthog farm, and needs to construct a pigpen for all of his hogs. The pigpen is a right triangle with a base of 6 feet and a height 3 feet less than 2 times the base, and the bedding for the pigpen costs 10 cents per square inch. What is the total cost of the bedding?
- A. \$2.70 B. \$3.60 C. \$86.40 D. \$388.80 E. NOTA
25. Jackson plays catch with a caracal. Caracals are excellent jumpers, and the trajectory of this particular caracal named Sid can be graphed as the parabola $y = -3(x - 7)^2 + 10$, what is the maximum height that Sid can achieve to catch Jackson’s ball?
- A. 7 B. 10 C. 3 D. 8 E. NOTA
26. While out trekking, David loses his favorite water bottle. This water bottle is special, however, as it is conical and named Connie the cone. If Connie has a diameter of 4, with the height being 3 times the radius, what is the volume of Connie?
- A. 4π B. 8π C. 16π D. 32π E. NOTA
27. Simba needs help learning about fractions. Quick! What kind of number is $5/11$?
- A. irrational number B. integer C. whole number D. rational number E. NOTA

28. David and Neil decide to play hopscotch with a colony of meerkats. If the number of squares on the hopscotch course is equal to the 13th prime number, what is the nonnegative difference between this number and 10?
- A. 19 B. 21 C. 27 D. 31 E. NOTA
29. Nonoko finds a watering whole full of hippopotamus, cichlid fish, and crocodiles. If the ratio of hippos to crocodiles is 3:4 and the ratio of cichlids to crocodiles is 1:3, what is the ratio of hippos to cichlids?
- A. 10:9 B. 8:9 C. 9:4 D. 9:5 E. NOTA
30. Congrats on making it to the end of the test! What is $(-23)^2 - 23^2$?
- A. -1058 B. 0 C. 529 D. 1058 E. NOTA