

1. Which of the following numbers is an integer?
 - a. -343
 - b. $\frac{654}{17}$
 - c. e
 - d. 33.333...
 - e. NOTA
2. Evaluate $-\frac{7}{2}[3 \times 2 + 6(90 - 73)^2]$
 - a. 6080
 - b. -6090
 - c. 6090
 - d. -8754
 - e. NOTA
3. Solve for x . $2x + 2 = 9(x - 6)$
 - a. -6
 - b. 6
 - c. -8
 - d. 8
 - e. NOTA
4. Hao wants to cut a triangle pattern out of a piece of paper. He knows that the measure of angle ABC is 36 degrees. He also knows that the measure of angle CAB is 5 times greater than the measure of angle BCA. What is the measure of angle CAB? (Hint: the measures of the angles in a triangle add up to 180)
 - a. 36 degrees
 - b. 24 degrees
 - c. 108 degrees
 - d. 120 degrees
 - e. NOTA
5. Samuel is an avid chess player. He determines that the probability of being checkmated in the next 3 moves is 0.02. He can also figure out that the probability of his queen being taken in the next 3 moves is 0.85. What is the probability that Samuel will have his queen taken and be checkmated in the next three moves?
 - a. 0.017
 - b. 0.018
 - c. 0.019
 - d. 0.020
 - e. NOTA
6. Tanner has constructed a semicircular fence around his backyard. If the length of the fencing is 6π feet, what is the radius of his enclosed area? (Hint: the circumference of a complete circle equals $2\pi r$.)
 - a. 3 feet
 - b. 6 feet
 - c. 8 feet
 - d. 12 feet
 - e. NOTA

7. In addition to having a semicircular backyard, Tanner strangely owns a pet cheetah. His veterinarian told him that his cheetah needs a space with area of 32π square feet in which to run around. Using your answer from Question 6, is the area Tanner has enclosed in his backyard large enough for his cheetah to properly frolick? If not, how many more square feet does Tanner need to add to his semicircular backyard? (Hint: the area of a complete circle equals πr^2 .)
- Yes
 - No, 23π more square feet
 - No, 14π more square feet
 - No, 27.5π more square feet
 - NOTA
8. Aldrich and Allan both got hit on the head very hard, and cannot remember their own ages. However, they do remember some clues about their ages. Aldrich remembers that his age is equal to Allan's age plus five. Allan remembers that his age is half of Aldrich's age. How old is Allan?
- 2 years old
 - 5 years old
 - 10 years old
 - 20 years old
 - NOTA
9. James keeps a small population of ants in his ant farm. The initial population of the ants was 1000. If the population increases by 5% every year, how many ants will there be 2 years after he purchased the ants? Round to the nearest whole ant.
- 1000 ants
 - 1050 ants
 - 1103 ants
 - 1158 ants
 - NOTA
10. Declan is not very familiar with how cars work, so while he is filling up his gas tank, he leaves his car running. Declan's car has a 20 gallon tank, and when he started filling up the tank there were 5 gallons left. If his running car drains gas at a rate of 1.5 gallons per hour and Declan fills the tank with gas at a rate of 4.5 gallons per hour, how many hours will it take to fill up his gas tank?
- 0.5 hours
 - 1 hour
 - 2 hours
 - 5 hours
 - NOTA
11. Determine the next term in the sequence $\{256, -64, 16, \dots\}$
- 8
 - 8
 - 4
 - 4
 - NOTA

12. Ami has a gambling obsession. Her method of choice is rolling dice. She and her friends roll a six-sided die 5 time, each time rolling a 6. What is the probability that on the 6th roll, Ami will NOT roll a 6?
- $\frac{5}{6}$
 - $\frac{1}{6}$
 - $\frac{1}{46656}$
 - $\frac{46655}{46656}$
 - NOTA
13. Which property of arithmetic is illustrated here? $a(b + c) = ab + ac$
- Distributive Property of Addition
 - Commutative Property of Multiplication
 - Associative Property of Addition
 - Distributive Property of Multiplication
 - NOTA
14. Andrew has not been doing so well in his calculus class lately. His first test score was a 89, his second was a 76, and his third was a 42. There will be one more test this quarter. If he wants to raise his current test average for the quarter to at least an 75, what minimum score does he need to make on the last test?
- 90
 - 91
 - 92
 - 93
 - NOTA
15. What is the least common multiple of 39 and 90?
- 3
 - 1170
 - 3510
 - 7020
 - NOTA
16. Simplify $(3x^2 + 7x - 5) - (8x^2 + 2x - 15)$
- $-5x^2 + 5x + 10$
 - $5x^2 - 5x - 10$
 - $11x^2 + 9x - 20$
 - $-11x^2 - 9x + 20$
 - NOTA
17. The operation $a\Delta b$ can be represented as $\frac{a+b}{a-b}$. What is $13\Delta 5$ in decimal form?
- 1.25
 - 1.75
 - 2.25
 - 2.75
 - NOTA
18. Andy has a jar of marbles. In this jar, there are red, green, and purple marbles. The number of green marbles is equal to one more than three times the number of red

marbles. The number of purple marbles is equal to six times the sum of the numbers of green and red marbles. If there are 78 purple marbles, what is the proportion of green marbles to red marbles?

- a. $\frac{10}{3}$
 - b. $\frac{3}{10}$
 - c. $\frac{3}{78}$
 - d. $\frac{78}{3}$
 - e. NOTA
19. Using the same jar of marbles from Question 18, what is the probability that Andy will draw a marble that is NOT green on his first draw?
- a. $\frac{81}{78}$
 - b. $\frac{78}{81}$
 - c. $\frac{81}{91}$
 - d. $\frac{78}{91}$
 - e. NOTA
20. Abby habitually eats too much pie, but she is trying to curb her addiction. On Monday, she eats one entire pie. On Tuesday, she eats one half of a pie. On Wednesday, she eats a quarter of a pie. If she continues this pattern, what portion of a pie will she eat on Sunday?
- a. $\frac{1}{16}$
 - b. $\frac{1}{32}$
 - c. $\frac{1}{64}$
 - d. $\frac{1}{128}$
 - e. NOTA
21. Given the table below, is the relationship between x and $f(x)$ proportional or non-proportional? If the relationship is proportional, state the slope.

x	$f(x)$
3	-9
5	-15
13	-39

- a. Proportional, slope = 3
 - b. Proportional, slope = -12
 - c. Proportional, slope = -3
 - d. Not proportional
 - e. NOTA
22. What value of k in the equation below allows for x to have infinitely many solutions?
- $$k(x + 3) = 6(x + 3)$$
- a. 6
 - b. 12

- c. 18
 - d. 24
 - e. NOTA
23. How many terms are there in the polynomial below?
 $31x^6 + 6x^5 + 115x^4 + 18x^3 + 6x^2 + x + 135$
- a. 1
 - b. 6
 - c. 7
 - d. 11
 - e. NOTA
24. Charlie is “vertically challenged”, and cannot reach a calculator 3 feet above the ground on a bookshelf. He has a 5 foot long ladder that he can lean up against the bookshelf, while resting the other end on the ground. This forms a right triangle with a hypotenuse of 5 feet and opposite side of 3 feet. How far from the base of the bookshelf should Charlie place the base of his ladder in order to just reach the calculator?
- a. 1 foot
 - b. 2 feet
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25. How many edges does a heptagon have?
- a. 5
 - b. 6
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26. Express the first 7 digits of π (including the first digit 3) in scientific notation.
- a. 3.141414×10^6
 - b. 3.14159×10^2
 - c. 3.141529×10^8
 - d. $3.1415926 \times 10^{-34}$
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27. If 5 donkeys weigh as much as 16 goats, and 4 goats weight as much as 1 tiger, how many donkeys weigh as much as 16 tigers?
- a. 16 donkeys
 - b. 18 donkeys
 - c. 20 donkeys
 - d. 24 donkeys
 - e. NOTA
28. If n is the sum of the first 8 prime numbers, what is $n^2 + 17$?
- a. 3498
 - b. 3499
 - c. 5946

- d. 5947
 - e. NOTA
29. A circle's radius is increasing at a rate of 3 meters per second. If the circle's initial radius was 1 meter, when will the circle's area equal 256π meters squared?
- a. After 2 seconds
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30. Congratulations! You have reached the end of the test. Now, because you surely have a lot of time left, find the sum of the first 50 whole numbers.
(Hint: $1 + 50 = 51$, $2 + 49 = 51$, $3 + 48 = 51$)
- a. 1020
 - b. 1350
 - c. 1465
 - d. 1275
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Answers

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