

NOTE: “e. None of these answers” is a choice for all questions, in case the answer is not given or there is a problem with the question.

1. Solve for x: $6(5x + 4) = 7(4x - 6)$.

a. -5	b. -15	c. -20	d. -33
-------	--------	--------	--------

2. On last year's tournament test Rance, Sebastian, Mary Claire and Amber made a score of 90 or above, 14 others scored in the interval [75,90), 25% of those testing scored in the interval [50, 75) , 40% scored in the interval (10, 50),, and 10% made a score 10 or below. How many students scored in the [50,75) interval?

a. 32	b. 18	c. 25	d. 26
-------	-------	-------	-------

3. Brandon and Brayden went on a biking trip where they averaged 18 km per hour. They biked north for 2 hours then due east for another 1 hour and 30 minutes. How far are they (as the crow flies) from their starting point?

a. 45 km	b. 25 km	c. 55 km	d. 35 km
----------	----------	----------	----------

4. Simplify:
- $$\frac{\frac{3}{8} + \frac{2}{3}}{\frac{3}{4} - \frac{1}{3}}$$

a. 1.66666...	b. 0.4	c. 2.5	d. 3.2
---------------	--------	--------	--------

5. Which equation has a line with a slope of $\frac{1}{2}$ and an x-intercept of 3?

a. $y = \frac{1}{2}x + 3$	b. $3x - y = \frac{1}{2}$	c. $2y = x + 6$	d. $y = \frac{1}{2}x - 3$
---------------------------	---------------------------	-----------------	---------------------------

6. The sum of three consecutive positive integers is 18. Find the sum of the multiplicative inverses of these same integers.

a. $\frac{107}{210}$	b. $\frac{18}{210}$	c. $\frac{1}{210}$	d. $\frac{81}{210}$
----------------------	---------------------	--------------------	---------------------

7. Drew and Danny play on a life-sized Quadrant I grid. Drew starts at (3,3) and runs at a slope of $\frac{1}{4}$ for $\sqrt{17}$ units. Danny starts at (7,11) and runs at slope 1 for $8\sqrt{2}$ units. When they arrive at their destination, Drew then runs to Danny to give him a taco. How far did Drew run from his terminal point to reach Danny?

a. 15	b. $8\sqrt{2}$	c. 17	d. $3\sqrt{13}$
-------	----------------	-------	-----------------

8. If April 10, 2010 is on Saturday, on what day is April 10, 2025?

a. Sunday	b. Tuesday	c. Thursday	d. Saturday
-----------	------------	-------------	-------------

9. Find **ABC** if A = the lowest possible score on this test, B = the largest prime factor of 2010, and C = the number of distinct arrangements of APRIL.

a. -2.01×10^5	b. -2.01×10^6	c. -6.03×10^5	d. -6.03×10^6
------------------------	------------------------	------------------------	------------------------

10. Vindhya cuts up an old calendar and places the names of all the months in a container. Veena chooses two names at random. What is the probability that neither of the names contain an "r"?

a. $\frac{1}{12}$	b. $\frac{1}{11}$	c. $\frac{2}{11}$	d. $\frac{7}{132}$
-------------------	-------------------	-------------------	--------------------

11. In the drawing, the measures of the angles in the triangles are in the ratio 1:3:5. What is the least possible value of x, the measure of the external angle shown?



a. 130°	b. 150°	c. 80°	d. 120°
----------------	----------------	---------------	----------------

12. When Annaleigh and Jordan rode the carousel at the Galleria, they noted that the width of the circular base was 12 feet. If the inner circumference of the base is 20π , what is outer circumference?

a. 32π	b. 36π	c. 44π	d. 52π
------------	------------	------------	------------

13. While at MathCounts, Jeremy saw that the ratio of the students who preferred Pepsi to Coke was 3:5, while the ratio of the students who preferred Sprite to Pepsi was 2:3. What is the ratio of those who prefer Coke to Sprite?

a. 3:2	b. 5:2	c. 2:5	d. 3:5
--------	--------	--------	--------

14. Jackson can eat a pie in 6 minutes. Travis can eat a pie in $7\frac{1}{2}$ minutes. How many seconds will it take them to eat a pie together?

a. 200 seconds	b. 150 seconds	c. 75 seconds	d. 225 seconds
----------------	----------------	---------------	----------------

15. Aashlesha collects Mystery Numbers. Her latest has 8 positive factors, including 2 and 7. What is the least possible value for this Mystery Number?

a. 64	b. 48	c. 42	d. 56
-------	-------	-------	-------

16. Amber Leigh, Morgan, Christopher, Elizabeth, Korie, and Joanne were running in a race. Morgan came in last. Elizabeth came in before Joanne but after Korie. Christopher came in third place. If Amber Leigh came in before Korie, who came in 4th?

a. Joanne	b. Elizabeth	c. Korie	d. Amber Leigh
-----------	--------------	----------	----------------

17. If it takes 16 Mathletes 10 hours to fill 8 tubs of lollipops, how long will it take 12 Mathletes to fill 9 tubs?

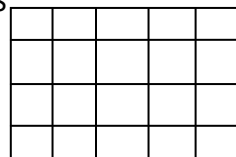
a. 10 hours	b. 12 hours	c. 15 hours	d. 24 hours
-------------	-------------	-------------	-------------

18. If $\sin^2 \alpha + \cos^2 \alpha = 1$, and $\sin \alpha = \frac{3}{5}$, find the positive value of $\cos \alpha$.

a. $\frac{3}{4}$	b. $\frac{4}{5}$	c. $\frac{5}{6}$	d. $\frac{6}{7}$
------------------	------------------	------------------	------------------

19. The Simmons students have to go to Berry for the tournament. The grid represents the different roads they could take to get there. If they always drove towards Berry, and each student drove a different way, how many students could make their way from Simmons to Berry?

SMS



BMS

a. 225	b. 126	c. 135	d. 210
--------	--------	--------	--------

20. Sameera has an ice cream cone that has a radius of 1 inch and a height of 4 inches. If the perfect sphere of ice cream on the cone has the same volume as the cone, what is its radius?

a. 4 inches	b. 2 inches	c. $\sqrt{2}$ inches	d. 1 inch
-------------	-------------	----------------------	-----------

21. What is the probability that a positive integer less than or equal to 24 is a factor of 24?

a. $\frac{1}{3}$	b. $\frac{2}{5}$	c. $\frac{3}{8}$	d. $\frac{8}{25}$
------------------	------------------	------------------	-------------------

22. If P is the slope of $7x - 2y = 7$ and Q is the y-intercept of $2x + y = 8$, find PQ.

a. 14	b. 28	c. $-\frac{7}{4}$	d. $-\frac{7}{2}$
-------	-------	-------------------	-------------------

23.
$$\frac{(8.5 \times 10^{-2})(7 \times 10^4)}{(14 \times 10^5)(3.4 \times 10^{-4})}$$

a. $\frac{5}{40}$	b. $\frac{50}{4}$	c. $\frac{5}{4} \times 10^2$	d. 1.25×10
-------------------	-------------------	------------------------------	---------------------

24. The longer sides of a rectangle increase by 20% while the shorter sides decrease by 20%. If the original dimensions were 30 x 50, find the ratio of the new perimeter to the original perimeter.

a. $\frac{21}{20}$	b. $\frac{48}{35}$	c. $\frac{24}{25}$	d. $\frac{43}{40}$
--------------------	--------------------	--------------------	--------------------

25. My dog Shadow weighs 22 pounds plus half his weight. What is 150% of Shadow's weight?

a. 45 pounds.	b. 66 pounds	c. 35 pounds	d. 52 pounds
---------------	--------------	--------------	--------------

TIE-BREAKERS. Answer on the back of your scantron sheet.

1. Find the sum: $1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + 1}}}$

2. $345_8 = 1404_y$. Find the value of y .

3. Simplify: $\frac{24a^4b^2c^5}{6a^3b^{-2}c^3}$