1. $-72 + (-84) =$ _____
A. -12   B. 12   C. -156   D. 14   E. 158

2. $98 - 76.4 =$ _____
A. 12.4   B. 21.6   C. 22.4   D. 12.6   E. 21.4
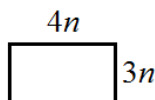
3. $3.4 \div 1.6 =$ _____ (nearest hundredth)
A. 5.0   B. 1.80   C. 5.44   D. 2.13   E. 1.54

4. $5\frac{2}{5} \cdot 6\frac{1}{2} =$ _____
A. $30\frac{1}{5}$ B. $30\frac{1}{10}$ C. $35\frac{1}{10}$ D. $33\frac{1}{5}$ E. $32\frac{9}{10}$

5. If $n = 5$ cm and each side of the rectangle below were doubled, what would be the new perimeter of the rectangle?

$4n$
$3n$

A. $14n$ cm   B. 35 cm   C. 70 cm   D. 120 cm   E. 140 cm

6. What is the LCM of the numbers 36 and 44?
A. 396   B. 4   C. 352   D. 6   E. 334

7. $\frac{3}{4}\% =$ _____ (decimal)
A. 0.0075   B. 0.075   C. 0.75   D. 7.5   E. 75

8. Simplify: $-5^2 - (4-7)^2 + \frac{1}{2}(8-20)$
A. -20   B. -40   C. 22   D. 28   E. - 28

9. 120 meters + 980 millimeters + 40 decimeters = _____ centimeters
A. 12,498   B. 1,140   C. 120,498   D. 124,980   E. 11,400

10. Which of the following is the next term in the following sequence? 1, 7, 17, 31, 49, …
A. 51   B. 67   C. 71   D. 83   E. 89

11. Sheila and Janice both started running a 10k fun run from the same starting point at 9:00 am. Sheila finished in 4 hours 20 minutes, while Janice finished 1.5 hours after Sheila finished. At what time did Janice finish the 10k fun run?
A. 1:20 pm   B. 12:30 pm   C. 2:50 pm   D. 2:40 pm   E. 3:30 pm

12. $73^2 =$ _____
A. 5,239   B. 5,329   C. 5,629   D. 146   E. 296

13. $\$22.55 =$ _____ nickels
A. 112   B. 365   C. 451   D. 511   E. 427

14. What is the sum of the next two terms in the following sequence?   5, -3, 10, -6, 15, -9, 20, -12, …
A. 10   B. 25   C. -15   D. 9   E. 8

15. If 8 = 3 + 5 and 3 + 5 = 6 + 2, then 8 = 6 + 2 is an example of the _____ property of equality.
A. Transitive   B. Commutative   C. Associative   D. Distributive   E. Symmetric

16. A shirt is on sale for 30% off. If the shirt is marked $18.40 and the discount will be taken off the ticket price, how much will be saved after the discount?
A. $12.88   B. $5.52   C. $23.92   D. $6.22   E. $2.62

17. Find $f(4)$ if $f(x) = 19 - 12x$.
A. 67   B. -52   C. -48   D. 17   E. -29

18. What is the sum of the number of faces, edges and vertices of a pentagonal prism?
A. 25   B. 23   C. 15   D. 30   E. 32

19. 4.52×10^{-4} is equal to which of the following?
A. 45,200   B. 0.0000452   C. 0.0452   D. 0.000452   E. 4,520,000

20. The _____ of a polynomial is the degree of the term with the highest degree of the polynomial.
A. mean   B. degree   C. nomial   D. coefficient   E. root

21. $XIV + LV =$ _____ (Roman numeral)
A. *XLVI*   B. *LXVIIII*   C. *XCVIIII*   D. *LXIX*   E. *XCIX*

22. Solve: $-3x + 8 > 59$
A. $x > -17$ B. $x > -\frac{67}{3}$ C. $x < -67$ D. $x > 67$ E. $x < -17$

23. The graph of a quadratic function is called a _____.
A. hyperbola   B. centroid   C. orthocenter   D. ellipse   E. parabola

24. Find the sum of $m + n$, if the prime factorization of 2,448 is $2^m \cdot 3^n \cdot 17$.
A. 6   B. 8   C. 2   D. 9   E. 5

25. The measure of an exterior angle of a regular pentagon is equal to _____°.
A. 60   B. 108   C. 72   D. 45   E. 54

26. Point A has coordinates (-12, 28) and point B has coordinates (14, 2). Find the midpoint of A and B.
A. (2, 13)   B. (-13, 13)   C. (1, 15)   D. (2, 15)   E. (13, 15)

27. Simplify: $(2x^3y)(2xy^2)(3x^3y^2)$
A. $7x^9y^4$ B. $7x^{10}y^5$ C. $12x^{10}y^5$ D. $12x^7y^5$ E. $12x^9y^4$

28. What are the coordinates of the *y*-intercept of the line with the equation $y = ¾ x - 19$?
A. (¾, -19)   B. (0, ¾)   C. (0, 19)   D. (0, -19)   E. (¾, 19)

29. $110101_2 = $ _____ $_4$
A. 22   B. 202   C. 311   D. 302   E. 321

30. If the disciminant of a quadratic equation is 0, then the quadratic equation will have _____ solution(s).
A. 2   B. 1   C. 0   D. infinitely many   E. 3

31. $(\{1, 2, 3, 4, 5\} \cap \{3, 4, 5, 6, 7, 8, 9, 10\}) \cup \{2, 4, 6, 8, 10, 12, 14, 16\}$ has _____ elements.
A. 12   B. 8   C. 13   D. 21   E. 10

32. Your height and your weight would be an example of which type of correlation?
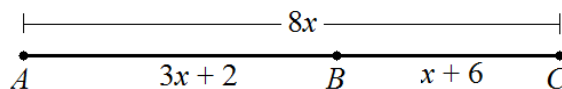A. Integral   B. Negative   C. No Correlation   D. Minus   E. Positive

33. What is the unit's digit of 3^{17}?
A. 9   B. 3   C. 1   D. 0   E. 7

34. If $3(4x + 3)(5x + 1) = 60x^2 + Bx + 9$, then $10B - 19 = $ _____.
A. 551   B. 171   C. 131   D. 589   E. 381

35. Using the picture below, the length of $\overline{AB}$ is equal to _____ units.

A. 2   B. 4   C. 6   D. 8   E. 10

36. In a 30-60-90 right triangle, if the long leg measures $5\sqrt{3}$ inches, what is the measure of the hypotenuse?
A. 5 inches   B. 10 inches   C. $10\sqrt{3}$ inches   D. $10\sqrt{5}$ inches   E. $5\sqrt{10}$ inches

37. What is the slope of the line that passes through the points (11, -5) and (2, 8)?
A. $-1\frac{5}{9}$ B. $-1\frac{4}{9}$ C. $-\frac{9}{13}$ D. $-1\frac{1}{3}$ E. $-\frac{2}{3}$

38. Calculate the mean absolute deviation for the set of data 16, 18, 19, 21 and 31.
A. 4   B. 4.5   C. 5   D. 5.5   E. 21

39. Multiply and write the answer in simplest radical form: $6\sqrt{20}(2\sqrt{8} + 7\sqrt{32})$
A. $384\sqrt{10}$ B. $54\sqrt{800}$ C. $384\sqrt{2}$ D. $48\sqrt{5} + 84\sqrt{2}$ E. $216\sqrt{10}$

40. Choose which of the following that is an example of an exponential decay function.
A. $y = 2(0.1)^x$ B. $y = 8\left(3\frac{4}{5}\right)^x$ C. $y = 4\left(\frac{8}{3}\right)^x$ D. $y = 0.9(5.5)^x$ E. $y = 2(2)^x$

41. Solve: $\frac{4x-3}{6} \geq 5$

A. $x \leq -8.25$ B. $x \geq 8.25$ C. $x \leq 8.25$ D. $x \geq 0.625$ E. $x \geq 22.25$

42. What type of function can be represented by the table below?

x	-2	-1	0	1	2
y	-3	4	11	18	25

A. Quadratic   B. Cubic   C. Radical   D. Absolute Value   E. Linear
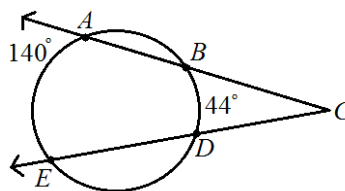
43. The vertex of the quadratic equation $y = x^2 - 4x - 5$ can be located in which of the following quadrants?
A. I   B. II   C. III   D. IV   E. V

44. Factor completely: $5x^3 + 15x$
A. $x(5x^2 + 15)$ B. $5x(x + 3)$ C. $(5x + 3)(x^2 + 5)$ D. $5x(x^2 + 3)$ E. $(5x + 3)(x + 5)$

45. In the picture below, what is the measure of $\angle ACE$, if arc AE $= 140°$ and arc BD $= 44°$?

A. $48°$ B. $46°$ C. $44°$ D. $70°$ E. $35°$

46. A circle has an equation $(x - 6)^2 + y^2 = 20$. What is the measure of the diameter of the circle?
A. $2\sqrt{5}$ units   B. 10 units   C. 400 units   D. $4\sqrt{5}$ units   E. 40 units
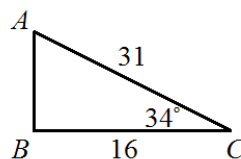
47. What is the sum of the coordinates of the solution to the system $\begin{cases} 2x + y = 42 \\ x = 2y - 14 \end{cases}$?
A. 26   B. 16   C. 28   D. 32   E. 24

48. If the point (14, 28) lies on a line that is a direct variation, then what is the constant of variation?
A. ½   B. 2   C. -1   D. 14   E. 1

49. Which equation below could be used to find the measure of $\overline{AB}$?

A. $\tan(34) = \frac{31}{x}$ B. $\tan(34) = \frac{x}{16}$ C. $\sin(34) = \frac{16}{x}$ D. $\cos(34) = \frac{x}{31}$ E. $\sin(34) = \frac{x}{16}$

50. Solve for x: $3|x - 4| = 141$
A. {-419, 427}   B. {-43, 51}   C. {-43, 427}   D. {-43}   E. {51}

2014-2015 TMSCA Middle School Mathematics Test #6 Answer Key

1. C	18. E	35. D
2. B	19. D	36. B
3. D	20. B	37. B
4. C	21. D	38. A
5. E	22. E	39. A
6. A	23. E	40. A
7. A	24. A	41. B
8. B	25. C	42. E
9. A	26. C	43. D
10. C	27. D	44. D
11. C	28. D	45. A
12. B	29. C	46. D
13. C	30. B	47. C
14. A	31. E	48. B
15. A	32. E	49. B
16. B	33. B	50. B
17. E	34. A	

7. ¾ % $= 0.75\% = 0.0075$

25. To find the exterior angle measure of a regular polygon, use the formula $\frac{360}{n}$, where n is equal to the number of sides of the polygon. Since we are given a pentagon, $\frac{360}{5} = 72$. Thus, the exterior angle measure of a pentagon is equal to $72°$.

27. $(2x^3y)(2xy^2)(3x^3y^2) = 2 \cdot 2 \cdot 3 \cdot x^{3+1+3} \cdot y^{1+2+2} = 12x^7y^5$.

30. If the disciminant of a quadratic equation is 0, then the quadratic equation will have 1 solution.

31. $(\{1, 2, 3, 4, 5\} \cap \{3, 4, 5, 6, 7, 8, 9, 10\}) = \{3, 4, 5\}$. $\{3, 4, 5\} \cup \{2, 4, 6, 8, 10, 12, 14, 16\} = \{2, 3, 4, 5, 6, 8, 10, 12, 14, 16\}$, which has 10 elements.

44. To factor $5x^3 + 15x$, first pull out the GCF. $5x^3 + 15x = 5x(x^2 + 3)$. Next, check and see if you can factor out what is remaining. For our problem, you cannot, so therefore the factored form of
$5x^3 + 15x$ is $5x(x^2 + 3)$.

48. A direct variation is a linear equation that can be written in the form $y = kx$, where k is the constant of variation. To find k, you must divide y by x. We are given the point (14, 28), so our $y = 28$ and our $x = 14$. 28 divided by 14 is 2, so our constant of variation is equal to 2.