2012 Math Medley

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. **Compare the fractions**: $\frac{4}{7} \square \frac{1}{6}$

A. $\frac{4}{7} > \frac{1}{6}$
C. $\frac{4}{7} < \frac{1}{6}$
B. $\frac{4}{7} = \frac{1}{6}$
D. cannot be compared

____ 2. **Order** $\frac{-1}{3}$, $\frac{1}{5}$, and $\frac{-1}{2}$ from ***least*** to ***greatest***.

A. $-\frac{1}{2}, -\frac{1}{3}, \frac{1}{5}$
C. $-\frac{1}{2}, \frac{1}{5}, -\frac{1}{3}$
B. $-\frac{1}{3}, -\frac{1}{2}, \frac{1}{5}$
D. $\frac{1}{5}, -\frac{1}{2}, -\frac{1}{3}$

____ 3. **Simplify:** $\frac{2}{3} + \frac{1}{11}$

A. $\frac{1}{11}$
B. $\frac{25}{33}$
C. 2
D. $\frac{3}{14}$

____ 4. **Simplify**: $13\frac{1}{3} - 7\frac{7}{9}$

A. $5\frac{5}{9}$
B. $6\frac{8}{27}$
C. $6\frac{2}{3}$
D. 7

____ 5. **Solve the equation**: $-6 + 3x = -9$

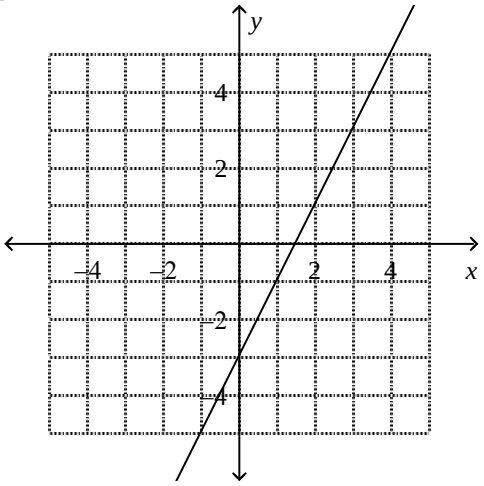
A. –1
B. –6
C. –5
D. –3

____ 6. **Solve the equation**: $\frac{x}{5} + 9 = 4$

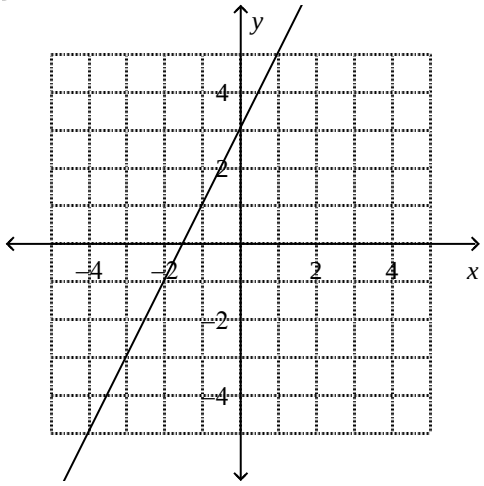
A. 65
B. –25
C. 5
D. 20

____ 7. **Solve the equation for y. Then graph the equation**.
$2x + y = 3$

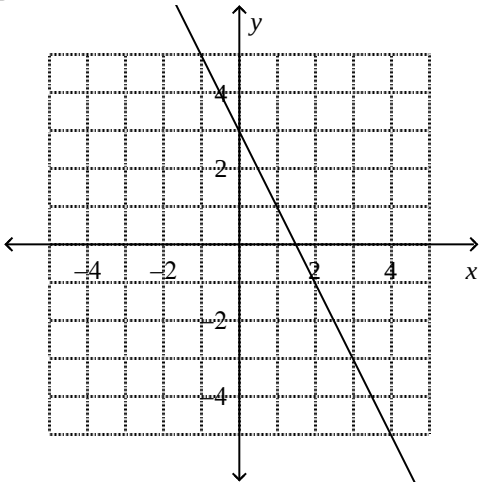
A. $y = 2x - 3$



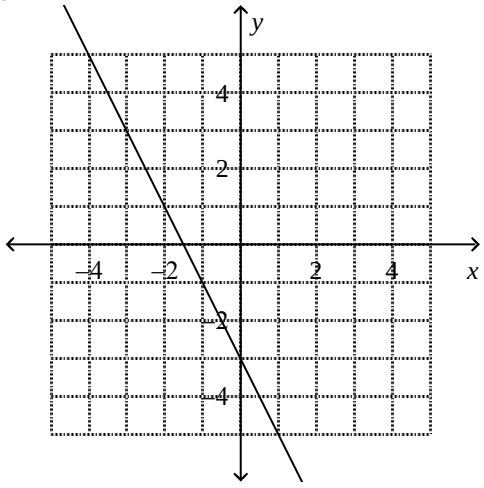
C. $y = 2x + 3$



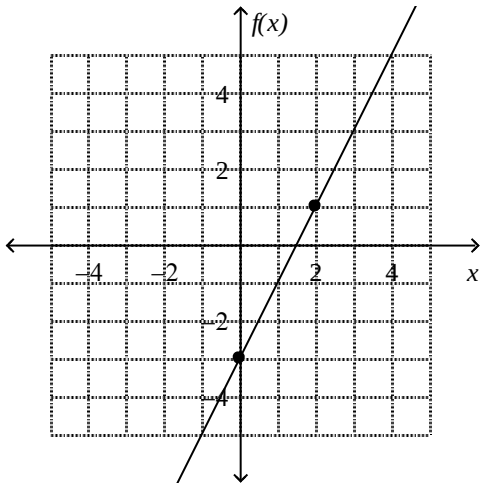
B. $y = -2x + 3$



D. $y = -2x - 3$



____ 8. **Which function rule describes the graph?**

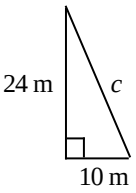


A. $f(x) = x + 3$ B. $f(x) = x - 3$ C. $f(x) = 2x + 3$ D. $f(x) = 2x - 3$

____ 9. **Which number is *irrational*?**

A. $\sqrt{81}$ B. $\sqrt{169}$ C. $\sqrt{156}$ D. $\sqrt{144}$

____ 10. **In the given right triangle, find the missing length.**



Not drawn to scale

A. 28 m B. 26 m C. 25 m D. 27 m

____ 11. **Find the distance between the two points. Round to the nearest tenth if necessary.**

(8, 8), (12, 11)

A. 7 B. 5 C. 25 D. 28

____ 12. **Find the midpoint of the segment with the given endpoints.**

D(1, 2) and *E*(–3, 6)

A. (–7, 10) B. (–2, 2) C. (–1, 4) D. (4, 64)

____ 13. **Evaluate the polynomial $6x - y$ for $x = -3$ and $y = 2$.**

A. 15 B. –20 C. 4 D. –16

____ 14. **Combine like terms:** $(-3y^2 - 7y - 9) - (4y^2 + 6y + 9)$

A. $y^2 - y$

B. $-9y^2 - 11y - 18$

C. $7y^2 + 13y + 18$

D. $-7y^2 - 13y - 18$

____ 15. **A playground is $(4x + 4)$ feet wide and $6x$ feet long. Find the area of the playground.**

A. $(-2x + 4)$ ft^2

B. $(10x^2 + 4x)$ ft^2

C. $(20x + 8)$ ft^2

D. $(24x^2 + 24x)$ ft^2

____ 16. **Simplify the product:** $-5x(-6x^2 + 6x + 4)$

A. $-5x^2 - 11x + 4$

B. $30x^3 + 6x + 4$

C. $-5x^2 + x + 4$

D. $30x^3 - 30x^2 - 20x$

____ 17. **Simplify the product**: $(x - 4)(x + 3)$

A. $x^2 - 7x - 12$

B. $x^2 + x - 12$

C. $x^2 - x - 12$

D. $x^2 - 12x - 1$

____ 18. **The base of a triangle is $(6h + 16)$ centimeters. The height of the triangle is $(3h - 8)$ centimeters. Find the area of the triangle.**

A. $(18h^2 - 96h - 64)$ cm^2

B. $(9h^2 - 16h - 64)$ cm^2

C. $(18h^2 + 64)$ cm^2

D. $(9h^2 - 64)$ cm^2

____ 19. **Which function is a *quadratic* function?**

A. $y = \frac{1}{x}$

B. $y = 5x - 7$

C. $y = -3x^2 + 2x$

D. $y = |x|$

____ 20. **Is the polynomial a *monomial*, a *binomial*, or a *trinomial*?**
$pq^4 - 3$

A. binomial B. trinomial C. monomial

____ 21. **Divide**: $2\frac{1}{2} \div 1\frac{5}{8} =$

A. $1\frac{3}{5}$ B. $\frac{13}{20}$ C. $1\frac{7}{13}$ D. $4\frac{1}{16}$

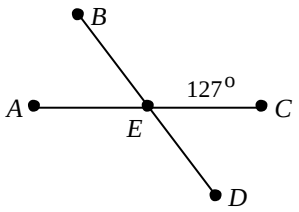
____ 22. **In the population of a particular country, the male-to-female ratio is 46 to 54. Write this ratio as a fraction in simplest form.**

A. $\frac{23}{27}$ B. $\frac{4}{5}$ C. $\frac{2}{3}$ D. $\frac{5}{6}$

____ 23. **Emma already has read 6 of 20 books on her summer reading list. What percent of the books on her list has she read already?**

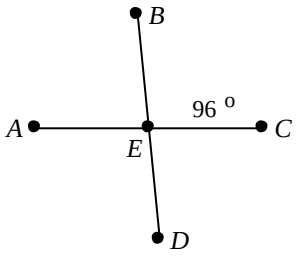
A. 23.1% B. 30.0% C. 333.3% D. 0.3%

____ 24. **Find the measure of $\angle AEB$ for $m\angle BEC = 127°$.**



A. 127° B. 254° C. 106° D. 53°

____ 25. **Find the measure of $\angle AED$ for $m\angle BEC = 96°$.**



A. 84° B. 168° C. 192° D. 96°

____ 26. **Write the percent as a decimal:** 73.1%

A. 0.00731 B. 731 C. 7.31 D. 0.731

____ 27. **Based on the pattern, what are the next two terms of the sequence?**
9, 15, 21, 27, . . .

A. 33, 972 B. 39, 45 C. 162, 972 D. 33, 39

____ 28. **Based on the pattern, what are the next two terms of the sequence?**
$5, \frac{5}{3}, \frac{5}{9}, \frac{5}{27}, \frac{5}{81}, \ldots$

A. $\frac{5}{84}, \frac{5}{246}$ C. $\frac{5}{243}, \frac{5}{246}$

B. $\frac{5}{243}, \frac{5}{729}$ D. $\frac{5}{84}, \frac{5}{87}$

____ 29. **Based on the pattern, what is the next figure in the sequence?**

A.  B.  C.  D. 

____ 30. **According to the pattern, make a conjecture about the product of 13 and 8,888,888.**

$13 \cdot 88 = 1144$
$13 \cdot 888 = 11{,}544$

$13 \cdot 8888 = 115{,}544$
$13 \cdot 88{,}888 = 1{,}155{,}544$

A. 115,555,544

C. 1,155,555,544

B. 1,115,555,444

D. 11,155,555,444

____ 31. **X, Y, and Z are numbers such that X < 0 < Y < 1 < Z. Determine which expression is NOT always a positive value.**

A. X^2Y B. $Z - X + Y$ C. X^Z D. $\frac{Z}{Y}$

____ 32. **Draw a conclusion from the two given statements**.

If a number is a multiple of 64,then it is a multiple of 8.
If a number is a multiple of 8, then it is a multiple of 2.

A. If a number is a multiple of 64, then it is a multiple of 2.

B. The number is a multiple of 2.

C. The number is a multiple of 8.

D. If a number is not a multiple of 2, then the number is not a multiple of 64.

____ 33. **Which two statements contradict each other?**

I. Jon, Elizabeth, and Franco read 27 books among them for a class.
II. Franco read 6 books.
III. None of the three students read more than 7 books.

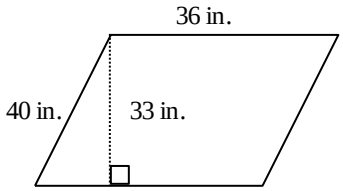
A. I and II

B. I and III

C. II and III

D. No two of the statements contradict each other.

____ 34. **Find the area. The figure is not drawn to scale.**

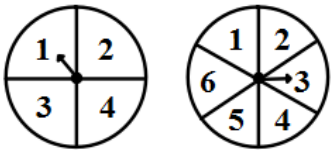


A. 1188 in.^{2} B. 69 in.^{2} C. 138 in.^{2} D. 1440 in.^{2}

____ 35. **Susan had 60 trading cards. After giving away *g* cards and receiving *r* cards, she had 70 cards. What is the value of *r* - *g*?**

A. 10
B. 20
C. 30
D. 40
E. 50

____ 36.



The two spinners in the figure above are to be spun, and each arrow will stop inside a numbered region. It is equally likely that a spinner will stop in any one of its numbered regions. What is the probability that the sum of the numbers in the regions where the arrows stop will be at least 8?

A. $\frac{1}{24}$
B. $\frac{1}{12}$
C. $\frac{1}{8}$
D. $\frac{1}{4}$
E. $\frac{1}{3}$

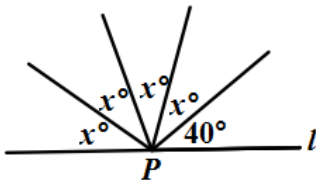
____ 37. **A fish tank contains 25 trout, 20 bass, 15 perch and no other kinds of fish. If one of these fish is to be chosen at random, what is the probability that the fish chosen will be a trout?**

A. $\frac{7}{12}$
B. $\frac{1}{2}$
C. $\frac{5}{12}$

D. $\frac{1}{3}$

E. $\frac{1}{4}$

____ 38.



In the figure above, point *P* is on the line *l*. What is the value of *x*?

A. 25

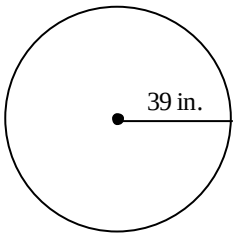
B. 30

C. 35

D. 40

E. 45

____ 39. **Find the circumference of the circle in terms of π.**



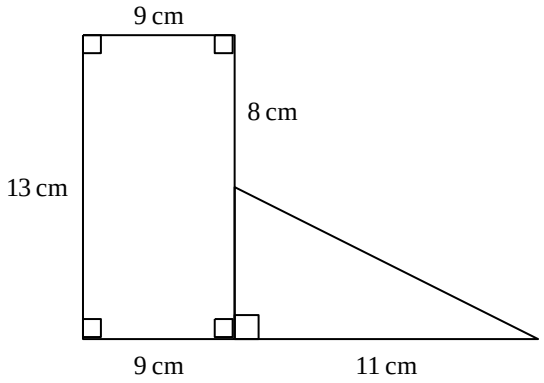
A. 156π in.

B. 39π in.

C. 1521π in.

D. 78π in.

____ 40. **Find the area. The figure is not drawn to scale.**



A. 144.5 cm^2 B. 127 cm^2 C. 172 cm^2 D. 50 cm^2

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Answer Section

MULTIPLE CHOICE

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