

MONTANA COUNCIL OF TEACHERS OF MATHEMATICS
2015 MATH CONTEST
FOUNDATIONS TEST

DIRECTIONS: DO NOT WRITE ON THIS TEST. Place the best answer for each question on the separate answer sheet.

1. Solve $7x - 3 = 32$.
A) 3 B) 4 C) 5 D) 6 E) None of these

For questions 2-4 use the following information. You are in charge of setting up your neighbourhood's outdoor movie night. When you put the projector 5 feet from the screen, you get an image that is 3 feet wide and 2 feet tall. Each time the projector is moved, the image dimensions remain proportional. The image also remains proportional to the distance from the projector to the screen.

2. What is the area of the projected image?
A) 3 B) 5 C) 6 D) 10 E) None of these

3. If the projector is moved so that it is placed 15 feet from the screen, what will the new width of the image be?
A) 6 B) 9 C) 12 D) 15 E) None of these

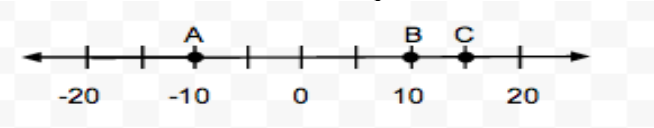
4. With your projector moved back to 15 feet from the screen, how many times larger is the area of this image than the area of the original image?
A) 3 times B) 6 times C) 9 times D) 15 times E) None of these

5. You have won the lottery, yay! The tax on your prize is 24%. How much will you pay in taxes on your \$500,000 prize?
A) \$120,000 B) \$12,000 C) \$380,000 D) \$38,000 E) None of these

6. The height of a triangle is 5 inches and the base is 2 inches, what is the area of this triangle?
A) 5 in^2 B) 7 in^2 C) 8 in^2 D) 12 in^2 E) None of these

7. You have called your local radio station and requested your favourite song. The D.J. tells you that the following will play before your song: a song that is $2 \frac{1}{3}$ minutes long, two 30 second commercials, a song that is 3 minutes and 10 seconds long, a song that is $4 \frac{1}{4}$ minutes, and 45 seconds of commercials. In how many minutes and seconds will your song start?
A) 114 min. 58 sec B) 66 min 8 sec C) 11 min 30 sec D) 11 min 3 sec E) None of these

Use the number line below for questions 8-10.



8. What is the change from point A to point B?
A) 4 B) 10 C) -20 D) 20 E) None of these

9. What is the change when moving from C to A?
A) -25 B) -15 C) -5 D) 5 E) None of these

10. At what number would you place point D for the change between point C and D to be -30?
A) -15 B) 30 C) -30 D) 15 E) None of these

11. Which inequality could be used to describe the following product $-3.1 \cdot 4 \cdot -6.2 = x$
A) $x > 0$ B) $x < 0$ C) $x = 0$ D) $x \leq 0$ E) None of these

12. Which following expression is equivalent to: $5(x + 14) - 2x$
A) $7x + 70$ B) $3x + 70$ C) $3x + 14$ D) $7x + 14$ E) None of these

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For questions 13-15, you roll a *pair* of standard six-sided dice.

13. What is the probability of rolling a 2 on one of the dice ?
A) $2/6$ B) $3/36$ C) $4/36$ D) $5/36$ E) None of these
14. What is the probability of adding the two dice together and getting a sum less than 12?
A) 97% B) 3% C) 54% D) 100% E) None of these
15. What is the probability of the *product* of the two dice being a prime number?
A) 0.10 B) 0.17 C) 0.19 D) 0.36 E) None of these

Use the following for questions 16 and 17.

$7(y + 3) = 3y + 5$
$7y + 3 = 3y + 4$ (line 1)
$4y + 3 = 4$ (line 2)
$4y = 1$ (line 3)
$y = \frac{1}{4}$ (line 4)

16. In which line is the student's first mathematical error.
A) line 1 B) line 2 C) line 3 D) line 4 E) None of these
17. What is the correct answer to the equation in number 16?
A) $y = \frac{1}{4}$ B) $y = -\frac{1}{4}$ C) $y = -4$ D) $y = 4$ E) None of these
18. When you graph the point (-2,4) starting at (0,0), you might move _____ first.
A) left 2 B) right 2 C) up 2 D) down 2 E) None of these
19. Addie brought 5 dozen cookies to school for her birthday. She gave 40% of the cookies to her teachers, and 50% of the remaining cookies to her best friend, and ate $\frac{1}{2}$ of what was left. What percent of the 5 dozen cookies remain?
A) 9% B) 15% C) 34% D) 43% E) None of these

Use the following information for questions 20 and 21 - Students at Castle Rock Middle School are raising money for their end of the year field trip. They can buy the roses from a wholesaler for \$0.40 each and will be sold for \$1.30 each. They will need \$72 to cover the cost of ribbon, cellophane and advertising.

20. How many roses must they sell to break even?
A) 55 B) 80 C) 56 D) 42 E) None of these
21. If the bus for their field trip costs \$270, how many roses must they sell for their profits to pay the transportation fees?
A) 475 B) 750 C) 375 D) 930 E) None of these

Use the following information for questions 22 and 23. Your allowance each week is \$10. You never seem to manage to make it last the whole week so you always have to borrow \$2 from your sister. They equation that models your situation is $y = 2x + 10$

22. What is the slope of the line describing your situation?
A) 12 B) 2 C) 12 D) 10 E) None of these
23. What is the y-intercept of the line describing your situation?
A) 12 B) 2 C) 12 D) 10 E) None of these
24. What is the value of $6!$
A) SIX B) yay C) 123456 D) 36 E) None of these

2015 FOUNDATIONS ANSWER KEY

1. C
2. C
3. B
4. C
5. A
6. A
7. C
8. D
9. A
10. A
11. A
12. B
13. E
14. A
15. B
16. A
17. C
18. A
19. B
20. B
21. E
22. B
23. D
24. E