

# Math Field Day

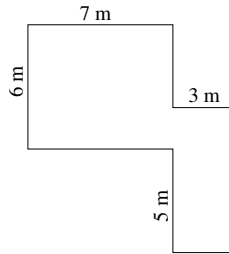
Mad Hatter 6-8 sample questions

(taken from some other contests)

**Note:** the problems given below are examples of problems given to 6-8 graders in other contests. They do not cover all the topics that can occur on the Math Field Day Mad Hatter 6-8 contest this year. They are only intended to give you a rough idea of the difficulty of the problems that may be given.

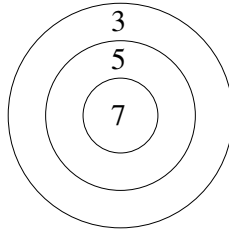
1. What number multiplied by itself is equal to the product of 6 and 150?
  - (a) 30
  - (b) 78
  - (c) 156
  - (d) 300
  - (e) None of the above
2. What has larger area: a  $10 \times 10$  square or a  $9 \times 11$  rectangle?
  - (a) The square
  - (b) The rectangle
  - (c) They have the same area
3. The last Friday of a particular month is on the 25th day of the month. What day of the week is the first day of that month?
  - (a) Sunday
  - (b) Monday
  - (c) Tuesday
  - (d) Wednesday
  - (e) Thursday
4. Jessie has \$5.10 worth of stamps. She has equal numbers of 50-cent, 20-cent, 10-cent, and 5-cent stamps. She has no other stamps. How many 50-cent stamps does she have?
  - (a) 3
  - (b) 4
  - (c) 5
  - (d) 6
  - (e) None of the above

5. What is the perimeter of the figure shown? All angles are right angles.



- (a) 21 m  
(b) 31 m  
(c) 35 m  
(d) 42 m  
(e) 45 m
6. A bag contains some marbles, all of the same size. Eight of them are black. The rest are red. The probability of drawing a red marble from the bag is  $\frac{2}{3}$ . Find the number of red marbles in the bag.
- (a) 8  
(b) 12  
(c) 16  
(d) 24  
(e) None of the above
7. A square piece of paper is folded in half to form a rectangle. The rectangle has a perimeter of 24 cm. Find the area of the original square, in  $\text{cm}^2$ .
- (a) 36  
(b) 64  
(c) 128  
(d) 256  
(e) None of the above

8. Six arrows land on the target below. Each arrow earns one of the point scores shown. Which of the following total scores is possible?



- (a) 16  
(b) 19  
(c) 26  
(d) 31  
(e) 41
9. At noon, ship A is 150 km west of ship B. Ship A is sailing east at 30 km/h and ship B is sailing north at 20 km/h. How far are the ships at 5 pm?
- (a) 50 km  
(b) 100 km **correct**  
(c) 200 km  
(d) 400 km  
(e) None of the above
10. What day of the week was yesterday if five days ago the day after tomorrow was Wednesday?
- (a) Monday  
(b) Tuesday  
(c) Thursday  
(d) Friday  
(e) Saturday
11. What is the product of the least common multiple and the greatest common factor of 23 and 34 ?
- (a) 748  
(b) 770  
(c) 782  
(d) 816  
(e) None of the above

12. If  $\frac{6}{7}$  of the students in Ms. Newman's class use  $\frac{7}{8}$  of the desks in the room, what is the least possible number of students in the class?
- (a) 16
  - (b) 25
  - (c) 36
  - (d) 49
  - (e) 100
13. When several thieves tried to divide a sum of money by giving 8 dollars to each thief, 2 thieves received nothing. When each thief took 7 dollars, they had 2 dollars left over. How many thieves are there?
- (a) 14
  - (b) 16
  - (c) 18
  - (d) 20
  - (e) 22
14. What is the smallest number of 5 cm by 3 cm rectangular pieces required to form a square with no cutting or gaps?
- (a) 6
  - (b) 10
  - (c) 15
  - (d) 21
  - (e) 30
15. Find  $|6 - 15| + |15 - 6|$ .
- (a) 0
  - (b) 9
  - (c) 18
  - (d) 19
  - (e) 20

16. For what value of  $x$  does  $216 * 6^6 = 6^x + 6^x + 6^x + 6^x + 6^x + 6^x$  ?

- (a) 5
- (b) 6
- (c) 7
- (d) 8
- (e) 11

17. Four of the points listed below lie on one line, and one does not. Which one is it?

$$(-1, -12), (1, -6), (2, -5), (-2, -9), (0, -7)$$

- (a)  $(-1, -12)$
- (b)  $(1, -6)$
- (c)  $(2, -5)$
- (d)  $(-2, -9)$
- (e)  $(0, -7)$

18. Emily bought a notebook that cost \$1.59. Sales tax was 11 cents. She paid with a one-dollar bill and three quarters. How much change should she receive?

- (a) 3 cents
- (b) 5 cents
- (c) 7 cents
- (d) 9 cents
- (e) None of the above

19. A 12 gallon tank is filled with water at the rate of  $\frac{1}{4}$  gallon in 5 seconds. How much time does it take to fill  $\frac{5}{6}$  of the tank?

- (a) 40 seconds
- (b) 1 minute 40 seconds
- (c) 2 minutes 40 seconds
- (d) 3 minutes 20 seconds
- (e) None of the above

20. The stadium in city A seats 11,500 more than the stadium in city B. The stadium in city C seats 6,800 more than the stadium in city B. If the seating capacity at the stadium in city A is 75,000, what is the seating capacity of the stadium in city B?
- (a) 56,700
  - (b) 70,300
  - (c) 79,700
  - (d) 93,300
  - (e) None of the above
21. The 5 tires of a car (4 + 1 spare) were each used equally on a car that had traveled 60,000 miles. For how many miles of that time was used each tire?
- (a) 12,000
  - (b) 15,000
  - (c) 48,000
  - (d) 75,000
  - (e) None of the above
22. What is the degree measure of the angle between the minute hand and the hour hand of a clock when it displays the time as exactly 2:00?
- (a)  $30^\circ$
  - (b)  $60^\circ$
  - (c)  $75^\circ$
  - (d)  $90^\circ$
  - (e) None of the above
23. Find a number  $x$  such that  $1 + 2 + 3 + 4 + 5 + 6 = 7 + x$ . What is the sum of the digits of  $x$ ?
- (a) 3
  - (b) 5
  - (c) 7
  - (d) 9
  - (e) 11