NAME _____ SCHOOL _____

2010 Middle School Math Festival **Individual Round: Teams 4, 6, and 7**

1. Find the sum: $\frac{2}{5} + \frac{1}{9}$

A. $\frac{1}{15}$ B. $\frac{23}{45}$ C. $\frac{3}{14}$ D. $\frac{19}{45}$

2. Find the GCF of 36, 60, and 96.

A. 12 B. 15 C. 14 D. 1340

3. What is the area of a square with a side of length $4\frac{2}{5}$ inches?

A. $19\frac{9}{25}$ in^2 B. $1\frac{19}{25}$ in^2 C. $3\frac{13}{25}$ in^2 D. $\frac{11}{25}$ in^2

4. Solve: $-9p - 17 = 10$

A. -3 B. 16 C. 18 D. -16

5. A dozen apples cost $2.55. At this rate, how much would 8 apples cost?

A. $20.40 B. $3.83 C. $0.21 D. $1.70

6. What linear function rule models the following data:

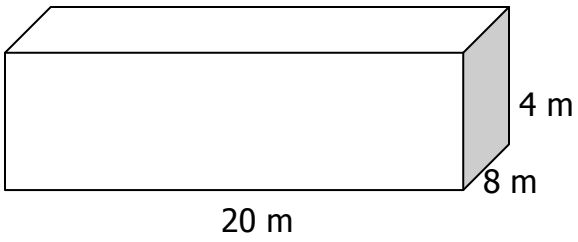
Input (x)	**1**	**2**	**3**	**4**	**5**
Output (y)	**9**	**12**	**15**	**18**	**21**

A. $y = 4 + 5x$ B. $y = 3 + 6x$ C. $y = 5 + 4x$ D. $y = 6 + 3x$

7. Which angle is the supplement of 55.1^0?

A. 124.9^0 B. 119.9^0 C. 49.9^0 D. 39.9^0

8. The Drama Club plans to paint the outside walls of the box that will serve as a second level to their stage. That means the top and bottom do not need to be painted. What is the total surface area which Needs to be painted?



A. 544 m^2 B. 272 m^2 C. 224 m^2 D. 112 m^2

9. Find the mean and median of the data set. Round to the nearest tenth, if necessary.
Altitude of lakes (in feet): {-12, -9, -14, -39, -49, -49, -18, -43}

A. Mean = -28.5, Median = -29.1
B. Mean = -29.1, Median = -49
C. Mean = -49, Median = -29.1
D. Mean = -29.1, Median = -28.5

10. A number cube is rolled 37 times and the results are listed in the table below. What is the experimental probability of rolling a number less than 4, written as a fraction in simplest terms?

Number	1	2	3	4	5	6
Times Rolled	2	6	7	8	9	5

A. $\frac{1}{2}$ B. $\frac{15}{37}$ C. $\frac{23}{37}$ D. $\frac{1}{6}$

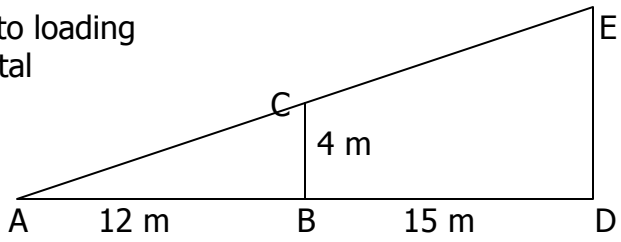
11. Simplify $(m^2 - m - 4) + (m - 5)$

A. $m^2 - 2m + 9$ B. $m^2 + 2m - 9$ C. $m^2 - 2m - 9$ D. $m^2 - 9$

12. Evaluate the expression $\frac{(a-b)^2}{ab}$ for $a = 1$ and $b = 4$.

A. $3\frac{1}{3}$ B. $2\frac{1}{2}$ C. $1\frac{4}{5}$ D. $2\frac{1}{4}$

13. The ramp to the right is used to move to loading docks at different levels. When the horizontal distance *AB* is 12 meters, the height of the loading dock, *BC*, is 4 meters. What is height of the loading dock *DE*?



A. 12 m B. 5 m C. 9 m D. 15 m

14. What is the equation for a line, in point-slope form, with a slope of $-\frac{3}{5}$ passing through point (-5, 5)?

A. $y+5=-\frac{3}{5}(x-5)$ C. $y+5=-\frac{3}{5}(x+5)$

B. $y-5=-\frac{3}{5}(x-5)$ D. $y-5=-\frac{3}{5}(x+5)$

15. Classify the triangle with angles measuring 69^0, 42^0, and 69^0.

A. Right B. Equilateral C. Isoceles, acute D. isosceles, obtuse

16. Calculate the total surface area of a cylinder with a radius of 5 inches and a height of 11.95 inches. Round your answer to the nearest whole number.

A. 532 in^2 B. 454 in^2 C. 375 in^2 D. 188 in^2

17. Find the mode and median of the data in the stem-and-leaf plot below.

5	4 4 8
6	0 3 5
7	3 4 6
8	2 5
9	7 8

A. no mode; 73

B. 63; 73.5

C. 54; 73

D. no mode; 73.5

18. How many different ways can 4 people stand shoulder-to-should in a line?

A. 6 ways B. 24 ways C. 12 ways D. 10 ways

19. What is the product expressed in scientific notation? $(9 \times 10^4)(8 \times 10^6)$

A. 7.2×10^{25} B. 1.7×10^{11} C. 7.2×10^{11} D. 72×10^{10}

20. Simplify $(5m^2 - 4m - 1) - (-4m^2 - 4)$

A. $-9m^2 - 8m - 1$ B. $9m^2 - 4m + 3$ C. $m^2 - 4m - 3$ D. $9m^2 + 4m - 3$

21. Paul needs $3\frac{7}{8}$ yards of fabric to make a tablecloth. How many tablecloths can you make from $38\frac{3}{4}$ yards of fabric.

A. 10 tablecloths B. 11 tablecloths C. 9 tablecloths D. 12 tablecloths

22. Mark weighs 74 pounds. Together, he and his sister weigh six pounds more than three times the weight of his sister. What is the weight of Mark's sister?

A. 37 pounds B. 18.5 pounds C. 34 pounds D. 40 pounds

23. Standing next to each other, a woman who is 5′ 10″ tall and her son cast shadows that are 3′ 11″ and 2′ 9″, respectively. What is the son's height, to the nearest inch?

A. 3′ 11″ B. 2′ 9″ C. 4′ 1″ D. 1′ 10″

24. Geoff planted dahlias in his garden. Dahlias have bulbs that divide and reproduce underground. In the first year, Geoff produced 8 bulbs. In the second year, it produced 16 bulbs and in the third year it produced 32 bulbs. If this pattern continues, how many bulbs should Geoff expect in the sixth year?

A. 64 bulbs B. 512 bulbs C. 128 bulbs D. 256 bulbs

25. Find the measure of each interior angle of a regular octagon.

A. 140^0 B. 203^0 C. 180^0 D. 135^0

26. Find the area of a circle with a diameter of 43.8 mm. Round your answer to the nearest tenth.

A. 137.6 mm^2 B. 1,506.7 mm^2 C. 376.7 mm^2 D. 6,027 mm^2

27. Find the perimeter of a right triangle with legs of 20 cm and 21 cm.

A. 47 cm B. 70 cm C. 82 cm D. 888 cm

28. In a school of 464 students, 89 students are in the band, 215 students are on sports teams, and 31 students participate in both activities. How many students are involved in neither band nor sports?

A. 160 students B. 191 students C. 249 students D. 433 students

29. You have four \$1 bills, two \$5 bills, five \$10 bills, and five \$20 bills in your wallet. You select one bill at random. Without replacing the bill, you choose a second bill. What is the probability of picking a \$1 bill followed by a \$10?

A. $\frac{9}{31}$ B. $\frac{5}{64}$ C. $\frac{3}{80}$ D. $\frac{1}{12}$

30. Simplify: $(9 \cdot 6^2 - 9 \cdot 2^2) \div (4 + 5)$

A. 8 B. 32 C. 140 D. 320