Warm-Up 6

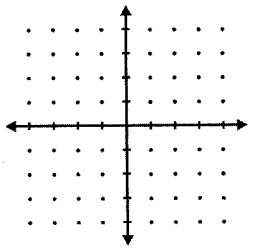
1. _____ What is the smallest positive integer that is divisible by 2, 5, 6 and 9?

2. _____ What is the value of $(0.07)^3$? Express your answer as a decimal to the nearest millionth.

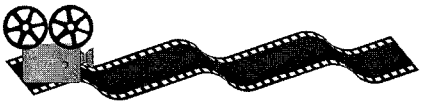
3. _____ If $x = \frac{a}{b}$ and $y = \frac{b}{a}$, then what is the square of the product of x and y?

4. _____ What is the only number that when added to its reciprocal is equal to 2?

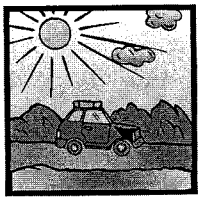
5. _____ points Two squares have centers at the origin of a coordinate plane and sides parallel to the axes. The smaller square has an area of 18 square units, and the larger square has an area of 50 square units. How many points with only integer coordinates are outside the smaller square region and inside the larger square region?



6. $ _____ Pedro earns $7.50 an hour at his job at Matrix Cinemas. If he works 20 hours this week and his employer withholds a total of 22% of his weekly pay for taxes and Social Security, what is his take-home pay for the week?



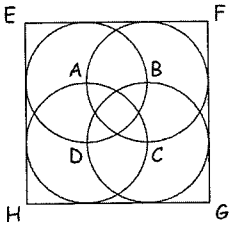
7. _____ pm Mary leaves New York City at 9:00 am, traveling to Charlotte, NC, at an average rate of 55 miles per hour. Simba leaves one hour later than Mary and follows Mary's route at an average rate of 65 miles per hour. At what time will Simba catch up to Mary?



8. (,) _____ What ordered pair of positive integers (r, s) satisfies the equation $5r + 6s = 47$, such that $r > s$?

9. _____ index cards What is the minimum number of 3-inch by 5-inch index cards needed to completely cover a 3-foot by 4-foot rectangular desktop without cutting the index cards?

10. _____ sq ft



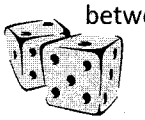
Points A, B, C and D are the centers of four circles, and they are also intersection points of these circles, as shown. Each circle has a radius of 6 feet and is tangent to two sides of square EFGH. What is the area of square EFGH?

Warm-Up 11

11 ~~151.~~ _____ On the number grid shown, Mara colored all of the positive multiples of n. Once completed, there was exactly one colored square in each column. What is the sum of all possible values of n?

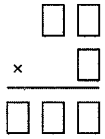
1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35

12 ~~152.~~ _____ Two standard, six-sided dice are rolled. What is the probability that the positive difference between the numbers rolled is 1? Express your answer as a common fraction.

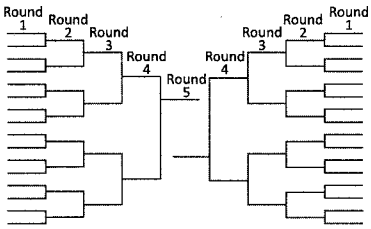


13 ~~153.~~ _____ What is the slope of a line perpendicular to the segment AB, which has endpoints A(–8.1, 4.9) and B(–7.6, 2.9)? Express your answer as a common fraction.

14 ~~154.~~ _____ Each of the digits 1 to 6 is placed in one of the boxes shown here to correctly complete the multiplication problem. What is the three-digit product?



15 ~~155.~~ _____ points

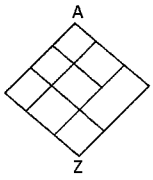


A jousting tournament has 32 competitors in a single elimination bracket, shown here. The table shows the number of points awarded for each correctly predicted match outcome in the tournament. What is the maximum number of points that can be earned?

Round 1	1 pt
Round 2	2 pts
Round 3	4 pts
Round 4	8 pts
Round 5	16 pts

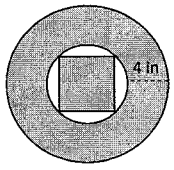
16 ~~156.~~ _____ The circumference of the base of a cone is triple the circumference of a cylinder with the same height. What is the ratio of the volume of the cylinder to the volume of the cone? Express your answer as a common fraction.

17 ~~157.~~ _____ paths How many paths from A to Z can be traced following line segments on this drawing if paths must be traced in a downward direction, with no retracing?



18 ~~158.~~ _____ If $\frac{x-y}{z-y} = -2$, what is the value of $\frac{x-z}{y-z}$?

19 ~~159.~~ _____ in^2



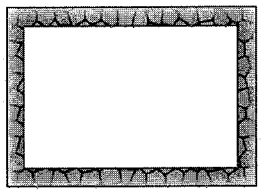
In the figure, the square is inscribed in the smaller circle, which has a radius of 4 in. The radius of the larger circle is 8 in. What is the total area of the shaded regions? Express your answer in terms of π.

20 ~~160.~~ _____ players In a tennis tournament, each of the 10 competitors plays each other player once. What is the maximum number of players who could end the tournament with a record of 7 or more wins?

Warm-Up 12

21 ~~161.~~ _____ ft

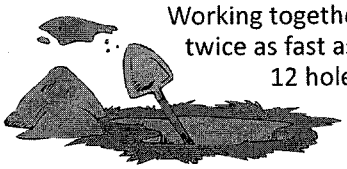
A rectangular swimming pool, shown here, is surrounded by a concrete deck that is 5 ft wide. The length of the pool is 1.5 times its width, and its area is 216 ft^2. What is the outside perimeter of the deck?



22 ~~162.~~ _____ : _____ pm

A subway arrives at the station every 25 minutes. A train arrives at the station every 45 minutes. If the subway and the train each arrive at noon, at what time will they next arrive at the station together?

23 ~~163.~~ _____ hours

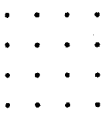


Working together, Tom and Dick can dig 3 holes in 6 hours. Knowing Tom digs twice as fast as Dick, how many hours would it take Tom, working alone, to dig 12 holes?

24 ~~164.~~ _____ times

The pages in a book are numbered from 1 to 363. How many times does the digit 3 appear as part of a page number of this book?

25 ~~165.~~ _____ squares



How many squares can be formed on a 16-pin rectangular geoboard?

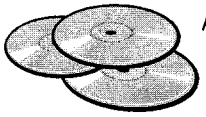
26 ~~166.~~ _____

In a sequence of five positive integers, each term after the first term is determined by multiplying the preceding term by 1.5. If the median of the five terms is 36, what is the mean of the five terms? Express your answer as a decimal to the nearest tenth.

27 ~~167.~~ _____ years old

The sum of Madison's age and 3 times Harper's age is 47 years. In 2 years Madison will be twice as old as Harper. How old is Harper?

28 ~~168.~~ _____ dollars

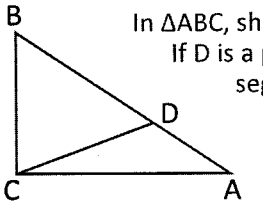


Andie bought 3 oldies CDs and 2 current CDs for $78. Deanne bought 2 oldies CDs and 3 current CDs for $82. What is the positive difference in the price of an oldie CD and the price of a current CD?

29 ~~169.~~ _____ intgrs

For how many positive integers containing no digit of zero is the sum of the digits equal to 5?

30 ~~170.~~ _____ units



In ΔABC, shown here, the measure of $\angle BCA$ is 90°, AC = 12 units and BC = 9 units. If D is a point on hypotenuse $\overline{AB}$, such that AD = 5 units, what is the length of segment CD? Express your answer in simplest radical form.