PIMS Elementary Grades Math Competition NAME: _____
24 May 2003
Target Round - Grade Six Division SCHOOL: _____

1. How many prime numbers are smaller than the $\sqrt{2003}$?

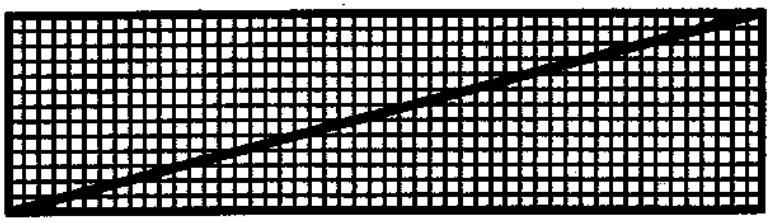
_____ 1

2. Two standard dice are rolled, a red one and a blue one.
Let R be the number showing on the red die and B the number showing on the blue die.
What is the probability that $R > 2B$?
Write the answer as a common fraction. _____ 2

3. How many positive whole numbers smaller than 1000 are either multiples of 9 or multiples of 11 ?

_____ 3

4. A 50×13 rectangle is divided into 1×1 squares by lines parallel to the sides of the rectangle. A diagonal of the rectangle is drawn.



How many of the 1×1 squares does the diagonal pass through ? _____ 4

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5. You have five playing cards: an ace, a king, a queen, a jack, and a ten.
In how many different orders can you put the cards if
the king and the queen are always next to each other ?

_____ 5

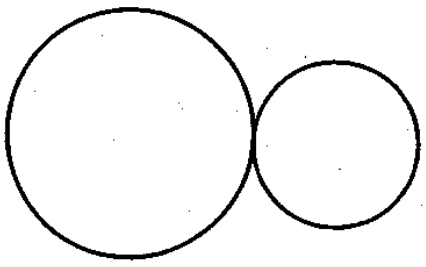
6. The number $999{,}999$ is multiplied by 999.
How many 9's are there in the answer ?

_____ 6

7. The first number in a sequence is 2, and the second number is 3.
Each new number is obtained by dividing the previous number
by the one before that. (So the third number is $3/2$ and the fourth is $1/2$.)
Find the tenth number in the sequence.

_____ 7

8. Two circles touch as shown.
One circle has area 18 and
the other has area 32.
Find the area of the smallest circle that contains both of the circles.



_____ 8

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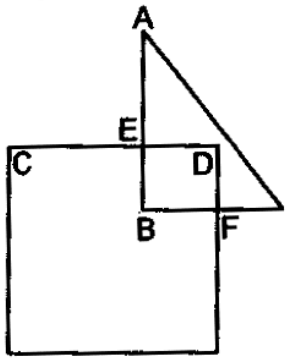
9. An 800 meter long train travelling at 20 meters per second went into a tunnel.
The front of the train emerged from the tunnel 90 seconds after
the rear of the train entered the tunnel.
Find the length of the tunnel, in meters.

_____ 9

10. Alphy owes Beth 20 cents.
In how many different ways can he pay off the debt using standard
Canadian coins (1-cent and/or 5-cent and/or 10-cent coins) ?

_____ 10

11. A right-angle triangle
and a square intersect
at points E and F, as
shown in the diagram.
Also, line segment AB is
perpendicular to line segment CD.
How many right angles are there in the diagram ?



_____ 11

12. Alex had three boxes of marbles.
In the first box, 30% of the marbles were blue.
There were twice as many marbles in the second box as
in the first box, and 25% were blue in the second box.
There were twice as many marbles in the third box as
in the second box, and 20% were blue in the third box.
Alex lost the third box.
What percentage of his blue marbles did he lose ?

_____ 12