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SPRINT ROUND -- GRADE 6

NO Peeking: Wait for instructions to start!

The region below is for the use of the markers

Max 9	Max 9	Max 8	Max 26	
Pr. 1-9	Pr. 10-18	Pr. 19-26	Stage Tot	Marker

NAME: _____

SCHOOL: _____

1. The 3-digit number $52a$, (a is the unit's digit), is divisible by 9.
What is the value of a ? _____ 1

2. Andy had 25 apples. After giving 6 apples to Bob, they each have the same number of apples. How many apples do they now have in total? _____ 2

3. The parliament proposes an increase of 400% to the current carbon tax to a new tax rate of $120 per tonne. What is the current tax rate per tonne (in $)? _____($) 3

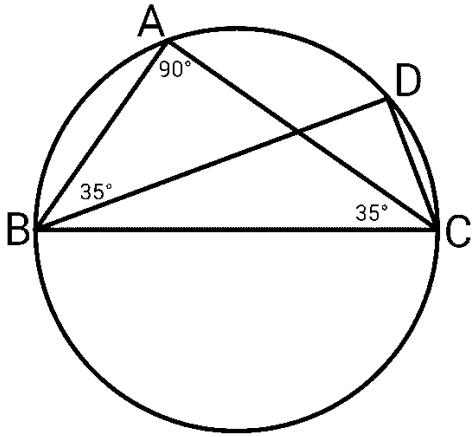
4. Beth rolled 2 dice and noted their sum. What is the probability that the sum was less than 7? Express your answer as a fraction in lowest terms. _____ 4

5. The volume of a right-angled container is $216m^3$. The values of two of its edges are $4m$ and $6m$. What is the value of the third edge, in m? _____(m) 5

6. $N + M = 20, N - M = 2$. What is the value of $N + 2M$? _____ 6

7. One prime number is the smallest prime larger than 70, and another prime is the largest prime smaller than 70. What is the sum of these two primes? _____ 7

8. ΔABC and ΔBCD are inscribed in a circle, and BC is its diameter.
$\angle BAC = 90°$, and $\angle ABD = \angle BCA = 35°$.
What is the value of $\angle ACD$ in degrees $(°)$?



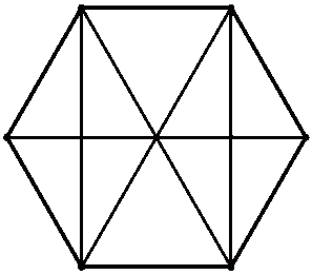
_____(°) 8

9. Round $\frac{31}{7} + \frac{31}{11}$ to the nearest whole number. _____ 9

10. The notation **factorial**, ($N!$), is defined as the multiplication of all positive whole numbers up to N. For example: $3! = 3 \times 2 \times 1, 4! = 4 \times 3 \times 2 \times 1$.
What is the value of $\frac{6!}{8!}$ expressed as a fraction in lowest terms? _____ 10

11. The average of David's first 9 math tests was 71.
His mark on the 10-th test was 98. What was his new average?
Express the answer as a decimal correct to one decimal place. _____ 11

12. The figure below is of a regular hexagon.
How many obtuse triangles of all sizes are there?



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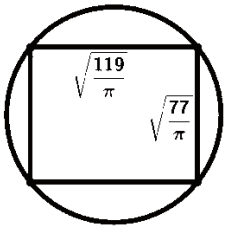
13. Dan read a 650-page book in the following way. On the first day he read every second page of the book staring and page 1 (i.e. he read pages 1, 3, 5, and so on). On the second day he read every third page staring and page 1 (i.e. he read pages 1, 4, 7, and so on). How many of the pages did he read twice? _____ 13

14. N is the smallest even number such that N^3 is greater than 2023. Find N. _____ 14

15. For every 1400 boys members of the Canadian Arts and Science Club there are 2023 girls that are members of the club. What percentage of the club membership are the girls? Round your answer to the nearest whole number. _____ 15

16. A group of people planted trees in the park. The first person planted 1 tree, the second planted 2 trees, the third planted 3 trees, and so on. The total number of trees that were planted was 351. How many people were in the group? _____ 16

17. A rectangle with sides $\sqrt{\frac{119}{\pi}}$ and $\sqrt{\frac{77}{\pi}}$ is inscribed in a circle.
What is the area of the circle?



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18. N is the smallest positive whole number such that $\frac{N^2-\sqrt{N}}{5}$ is a positive whole number. Find N. _____ 18

19. $\frac{1}{x}+\frac{1}{2x}+\frac{1}{3x}=2$. Express x as a fraction in lowest terms. _____ 19

20. Carl rode his bike at a speed of $24\,\frac{km}{h}$ (kilometres per hour).
How many metres did he ride in 13 minutes? _____(m) 20

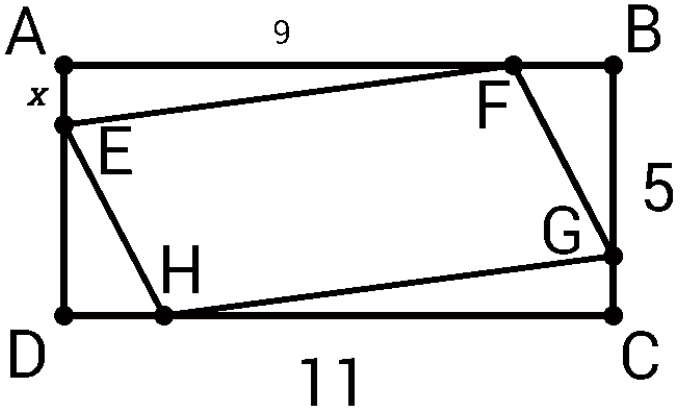
21. a and b are two numbers. Define the operation $a\#b$ as $2ab+a-b$. Find $(1\#2)\#6$. _____ 21

22. Eric takes 4 times longer to paint a ceiling than to paint a wall. He charges 20% more per hour to paint a ceiling than to paint a wall. Eric painted 5 ceilings and 12 walls. His hourly charge per wall was $40 and his total earning was $2520. How many hours did he work in total? _____(h) 22

23. In how many ways can you pay 75 cents using any combination of 5, 10, and 25 cent coins? _____ 23

24. $N+(N+1)+(N+2)+\cdots+2023=94\times1000$, and $N>0$. What is the value of N? _____ 24

25. $ABCD$ is a rectangle with sides 11 and 5. $EFGH$ is a parallelogram. $AE=x, AF=9$. The area of $EFGH$ is $\frac{2}{3}$ of the area of $ABCD$. What is the area of ΔAEF? Express the answer as a fraction in lowest terms.



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26. Frank wrote down the sum of the digits of every number from 1 to 1000. (Examples: for the number 2 he wrote 2, for the number 24 he wrote 6 because $2+4=6$, for the number 200 he wrote 2 because $2+0+0=2$, and for the number 550 he wrote 10 because $5+5+0=10$). How many times did he write the digit 0? _____ 26