2007 Rocket City Junior Math Mania
Individual Test – 4th Grade

1. If Zack drives 40 km in 45 minutes and then 60 km in 30 minutes, what is his average speed for the entire trip in **kilometers per hour**?

2. Round 123.456 to the nearest hundredth.

3. What is the area, in square centimeters, of a rectangle with a side measuring 15 cm and a perimeter of 42 cm?

4. When a card is drawn from a standard 52-card deck, what is the probability that it is either a face card (J, Q, or K) or a red card (or both)?

5. If three chickens can lay four eggs in five days, how many eggs can six chickens lay in ten days?

6. What is the circumference, in centimeters, of a circle with a radius of 9 cm?

7. How many integers between 10 and 20 are prime?

8. What is the perimeter, in centimeters, of a regular octagon with sides measuring 23 cm?

9. When five coins are flipped, what is the probability that there are more heads than tails?

10. In which quadrant does the point $(-2,-9)$ lie?

11. Twice my favorite number is equal to three times my sister's favorite number, and twice my sister's favorite number is four more than my favorite number. What is my favorite number?

12. What is the perimeter, in centimeters, of a right triangle with legs measuring 9 and 12 cm?

13. 35 is 20% of what number?

14. What is the eighth term of an arithmetic sequence with 37 as its first term and 12 as its common difference?

15. What is the surface area, in square centimeters, of a right rectangular prism (a box) with edges measuring 7, 8, and 9 cm?

16. What is the remainder when 57 is divided by 12?

17. Express the sum of 2.6 and .26 **as a decimal**.

18. What value(s) of b satisfy $2(b-3)+4(5-2b)=-4$?

19. What are the coordinates, in the form (x,y), of the reflection of the point $(8,3)$ across the line $y=-2$?

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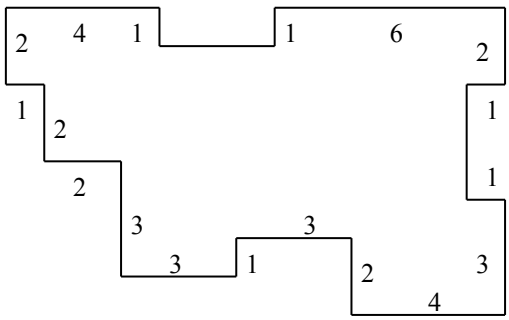
20. What is the area, in square centimeters, of an isosceles triangle with sides measuring 13, 13, and 10 cm?

21. Two numbers sum to 55 and differ by 17. What is the value of the smaller number?

22. Evaluate:
$$\begin{array}{r} 345 \\ +678 \\ \hline \end{array}$$

23. What is the perimeter of the figure shown, in which all angles are right angles?



24. In a recent pudding survey of 35 people, 21 liked butterscotch, 23 liked tapioca, and 6 liked neither. How many people surveyed liked both flavors?

25. What is the greatest common factor of 42 and 70?

26. What value(s) of a satisfy $3a + 4 = 58$?

27. How many hours are there in two weeks?

28. How many diagonals can be drawn in a convex septagon (7-gon)?

29. In how many ways can four red bricks and seven black bricks be arranged symmetrically in a row? (e.g. RRBBBBBBBRR)

30. What is the sum of the squares of the fifteen smallest positive integers?