Mathematical Reasoning and Word Problems: Worksheet 4 [ANSWER KE

Grade 5 | Mathematics | Ch 20: Mathematical Reasoning and Word Problems | Total Marks: 19 | Time: 45 Minutes

Q1. A farmer has 15 cows and 25 chickens. How many total legs are there on the farm? [1 Mark]

Correct Answer: 110 legs

Explanation: (15 cows x 4 legs = 60) + (25 chickens x 2 legs = 50) = 110 legs.

Q2. If 5 identical notebooks cost $15, how much will 12 of the same notebooks cost? [1 Mark]

Correct Answer: $36

Explanation: Unit price = $15 / 5 = $3. For 12 notebooks = 12 x $3 = $36.

Q3. A mystery number is multiplied by 4, and then 12 is added. The result is 52. What [1 Mark]
is the mystery number?

Correct Answer: 10

Explanation: Work backwards: 52 - 12 = 40. 40 / 4 = 10.

Q4. Which two consecutive whole numbers have a product of 156? [1 Mark]

Correct Answer: 12 and 13

Explanation: 12 x 13 = 156.

Q5. At the Eco-Friendly Solar Park, an event organizer arranges 144 chairs into rows. [1 Mark]
The number of chairs in each row is 2 more than the number of rows. How many rows of chairs are there?

Correct Answer: 10 rows or 12 chairs

Explanation: 10 rows x 14 = 140; 12 rows x 12 = 144. If square: 12 rows of 12 chairs.

Q6. Together, Ethan and his sister have 64 marbles. Ethan has 12 more marbles than his [1 Mark]
sister. How many marbles does his sister have?

Correct Answer: 26 marbles

Explanation: Subtract the difference: 64 - 12 = 52. Divide equally: 52 / 2 = 26 marbles for the sister (Ethan has 26 + 12 = 38).

Q7. A water tank empties at a rate of 18 liters per minute while a pipe fills it at 25 [1 Mark]
liters per minute. What is the net increase in water volume after 20 minutes?

Correct Answer: 140 liters

Explanation: Net fill rate = 25 - 18 = 7 L/min. In 20 minutes: 7 x 20 = 140 liters.

Q8. Solve the logic puzzle: [?] + [?] = 18 and [?] x [?] = 77. The two numbers [1 Mark]
are 7 and [?].

Correct Answer: 11

Explanation: 7 + 11 = 18 and 7 x 11 = 77.

Q9. Work backwards to find X: ((X + 6) x 3) - 9 = 45. X = [?]. [1 Mark]

Correct Answer: 12

Explanation: 45 + 9 = 54; 54 / 3 = 18; 18 - 6 = 12.

Q10. A student solves: 'If 3 cats catch 3 mice in 3 minutes, how many cats catch 100 [1 Mark]
mice in 100 minutes?' The student answers '100 cats.' Explain the flaw and state the correct answer.

Correct Answer: 3 cats

Explanation: Rate of 3 cats is 1 mouse per minute. In 100 minutes, those same 3 cats catch 100 mice. 3 cats are needed.

Q11. To divide $120 between two friends in a 2:1 ratio, a student calculates $120 / 2 [1 Mark]
= $60 each. What is the correct division?

Correct Answer: $80 and $40

Explanation: A 2:1 ratio has 2 + 1 = 3 equal shares. $120 / 3 = $40 per share. The shares are $80 (2 shares) and $40 (1 share).

Q12. Explain why working backwards from the final result is an effective strategy for **[2 Marks]**
solving multi-step arithmetic mystery problems.
Correct Answer: Working backwards inverts each consecutive operation (addition becomes subtraction, multiplication becomes division), systematically unwrapping the mystery quantity without guessing.
Explanation: Inverse operations systematically undo transformations step-by-step to recover the starting value.

Q13. If the perimeter of a rectangle is fixed at 24 cm, which dimensions (length and **[2 Marks]**
width) yield the greatest possible area? Explain why.
Correct Answer: A square of 6 cm x 6 cm gives the greatest area (36 cmÂ²). As the rectangle becomes more square-like, the product of length and width is maximized for a fixed sum of sides.
Explanation: Equal side distribution maximizes area for any given perimeter boundary.

Q14. In a barn, there are horses and ducks. Counting heads gives 35 heads; counting **[2 Marks]**
legs gives 110 legs. How many horses and how many ducks are in the barn?
Correct Answer: 20 horses and 15 ducks
Explanation: If all 35 were ducks: 35 x 2 = 70 legs. Extra legs = 110 - 70 = 40 legs. Each horse contributes 2 extra legs: 40 / 2 = 20 horses. Ducks = 35 - 20 = 15 ducks.

Q15. A grandfather's age is 6 times his grandson's age. In 12 years, the grandfather **[2 Marks]**
will be only 3 times as old as his grandson. What are their current ages?
Correct Answer: Grandfather is 48, grandson is 8
Explanation: Let grandson = g, grandfather = 6g. In 12 years: 6g + 12 = 3(g + 12) -> 6g + 12 = 3g + 36 -> 3g = 24 -> g = 8. Grandfather = 6 x 8 = 48.