Answer Key: Applied Ratio Extension Problems

Recipe Questions Past

1. 18 muffins; Flour: 450 g; Sugar: 300 g; Eggs: 3; Milk: 375 ml.
2. Tomato passata: 300 ml; Garlic: 1.5 cloves (15 g); Olive oil: 75 ml; Basil: 37.5 g.
3. Scaling factor: $\frac{5}{3}$; Increase: $\approx 66.67\%$; Flour: 400 g; Butter: 300 g; Sugar: 250 g; Eggs: 5.
4. Original mass: 400 g.
5. (a) Reduction: 15%.
   (b) Water: 510 ml; Salt: 17 g; Yeast: 12.75 g.

Recipe Questions Future

6. Scaling factor: 1.5625; Chocolate: 312.5 g; Butter: 234.375 g; Eggs: ≈ 4.7 (practically 5).
7. Area scaling factor: 2.25; Flour: 562.5 g; Sugar: 450 g; Eggs: 9.
8. (a) Small area: 300 cm^2; Large area: 875 cm^2.
   (b) Scaling factor: $\frac{35}{12} \approx 2.9167$; Cheese: ≈ 583.33 g; Flour: 437.5 g; Tomato sauce: ≈ 291.67 ml.
9. (a) Perimeter: 92 cm.
   (b) Sprinkles: 23 g.
   (c) Cake base and icing: multiply by 4; Sprinkles: multiply by 2.
10. (a) Original perimeter: 32 cm.
    (b) New perimeter: 48 cm.
    (c) Sugar: 270 g.
    (d) Cocoa powder: 120 g.
    (e) Eggs (assuming linear scaling): 4.5.

Best Buys Past

11. 750g box is better value.
12. Store A is cheaper.
13. 1.5L bottle on sale is better value.
14. Cheapest option: buy separately for 155.50 £.
15. Plan A is better by 90 £ (7.5% of original price).

Best Buys Future

16. Store B is cheaper (360 dollars).
17. Type B is cheaper (414 £).
18. Same cost (78.75 £).
19. Seed B is more economical.
20. Material Y is more economical per year (222.83 dollars/year).

Scaling Past

21. New length: 12 cm.
22. 1 cm represents 0.25 km; Percentage: 0.004%.
23. Original width: 15 cm.
24. Drawn length: 4 cm.
25. (a) Model A: 3 cm; Model B: 4.8 cm.
    (b) Actual height: 18 m.
    (c) Model B is 60% larger.

Scaling Future

26. New perimeter: 36 cm.
27. Actual area: 96 m^2.
28. Actual side length: 1 m.