

Warm-Up 2

41. The perimeter of the pool is $2(80 + 45) = 2 \times 125 = 250$ m. If we multiply this perimeter by 3, we will have all the area of the footpath with the exception of four 3×3 squares at the corners of the pool. The area of the footpath is $3 \times 250 + 4 \times 9 = 750 + 36 = \mathbf{786 \text{ m}^2}$.
42. If the arithmetic mean of six numbers is 7, then the sum of the numbers must be $6 \times 7 = 42$. This means $6 + 8 + 5 + 7 + x + 4 = 42$, so we can simplify and solve for x . We get $30 + x = 42$, so $x = \mathbf{12}$.
43. Seven of the 11 bags of flour contain more than 5 lbs of flour, so the probability that a bag chosen at random contains more than 5 lbs of flour is $\mathbf{7/11}$.
44. First let's order the numbers in the dataset from least to greatest: 1, 1, 2, 2, 2, 3, 3, 3, 4, 5. Now we can see more easily that there are three instances of the number 2 and three instances of the number 3. Both of these are modes, so there are $\mathbf{2}$ distinct modes in the dataset.
45. The least common denominator of 4, 3, 2 and 1 is 12, so the sum is $1/4 + 2/3 + 3/2 + 4/1 = (3 + 8 + 18 + 48)/12 = \mathbf{77/12}$.
46. We can "cast out nines" from the digits of the number 9,876,543 to get the remainder. We throw out the 9, the 6 and 3, which make 9, and the 5 and 4, which make 9. That leaves just the 8 and the 7, which add to 15. Since 15 is 6 more than a multiple of 9, the remainder, when 9,876,543 is divided by 9, is $\mathbf{6}$.
47. There will be 7 classes of 20 min and just 6 of the 5-min breaks between classes, so the total is $7 \times 20 + 6 \times 5 = 140 + 30 = 170$ min, or 2 h and 50 min. To find what time the final class ends, we need to add 2 h and 50 min to the 8:45 start time, but we might think about it as 10 min less than 3 h later, which is $\mathbf{11:35 \text{ a.m.}}$
48. The sum of the first nine prime numbers is $2 + 3 + 5 + 7 + 11 + 13 + 17 + 19 + 23 = \mathbf{100}$.
49. Since Alyx can bake 6 dozen cookies, she needs her relatives to bake the other $35 - 6 = 29$ dozen cookies. Since $29 \div 2 = 14.5$, Alyx will need 15 of her relatives to bake cookies. Including Alyx herself, that's $\mathbf{16}$ bakers.
50. A pair of angles is supplementary if the sum of their angle measures is 180° . If the degree measures of these two angles are in a ratio of 1:4, then there are $1 + 4 = 5$ parts, and the smaller angle is $180 \div 5 = 36^\circ$. The degree measure of the larger angle is $4 \times 36 = \mathbf{144^\circ}$.