

Student Name: _____
Please write your name on *every* page.

2 Section B

B1

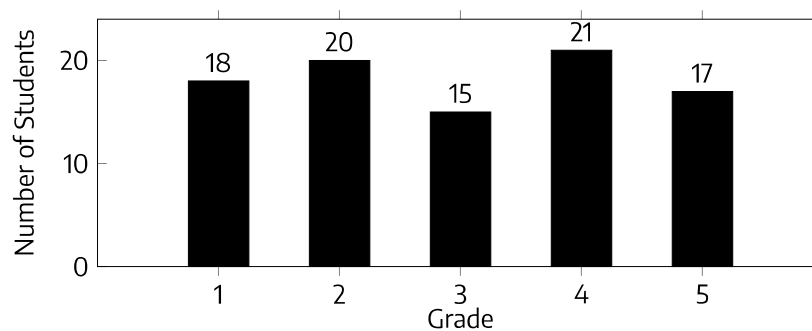
How many zeroes does the number one million have?

Solution. The word one million means the number 1000000. If we count the zeroes, we get that there are 6 of them.

Answer to B1: 6

B2

In an elementary school, the students are in grades 1 through 5. The teachers counted the students in each grade and made a graph:



A student in grades 1, 2, or 3 is a junior, while a student in grades 4 or 5 is a senior. How many more junior students are there than senior students?

Solution. To get the number of junior students, add up the number of students in grades 1, 2, and 3 to get $18 + 20 + 15 = 53$. Similarly, the number of senior students is $21 + 17 = 38$. Then there are $53 - 38 = 15$ more junior students than senior students.

Answer to B2: 15

B3

Four friends have 4, 8, 12, and 16 jelly beans respectively. If each of them gives half of their jelly beans to a fifth friend, how many jelly beans will that fifth friend have?

Student Name: _____
Please write your name on *every* page.

Solution. Among the four friends, there are $4 + 8 + 12 + 16 = 40$ jelly beans. If half of those are given to the fifth friend, they will have $40 \div 2 = 20$ jelly beans.

Answer to B3: 20

B4

The number 8 is multiplied by a number between 1 and 10, and the product ends in 6. Write the two possible numbers that could have made this happen.

Solution. We have that $8 \times 1 = 8$, $8 \times 2 = 16$, $8 \times 3 = 24$, $8 \times 4 = 32$, $8 \times 5 = 40$, $8 \times 6 = 48$, $8 \times 7 = 56$. So we see that 2 and 7 are the numbers that can make this happen.

Answer to B4: 2 and 7

B5

Three triangles and four squares together have the same number of sides as how many pentagons?

Solution. A triangle has 3 sides, so three triangles have $3 \times 3 = 9$ sides. A square has four sides, so four squares have $4 \times 4 = 16$ sides. Together, they have $9 + 16 = 25$ sides. A pentagon has 5 sides, so it takes $25 \div 5 = 5$ pentagons.

Answer to B5: 5

B6

A box of cookies weights 500 grams. The nutrition facts on the side of the box say that 4 cookies weigh 20 grams. If the box does not weigh anything, how many cookies are in the box?

Solution. If 4 cookies weigh 20 grams, then 1 cookie weighs 5 grams. Then there are $500 \div 5 = 100$ cookies in the box.

Answer to B6: 100

Student Name: _____
Please write your name on *every* page.

B7

A class lines up from shortest to tallest for picture day. One student notices that he is both the 8th shortest person and 13th tallest person in his class. How many students are in the class?

Solution. If a student is the 8th shortest person in the class, then there are $8 - 1 = 7$ students shorter than him. If he is the 13th tallest person in the class, there are $13 - 1 = 12$ students taller than him. We have also not counted the student himself yet. So there are $7 + 12 + 1 = 20$ students in the class.

Answer to B7: 20

B8

In a store aisle, there are three ladders for an employee to choose from. Each ladder has steps with 25 cm of space between them (so that the first step is 25 cm above the ground). Ladder A has 3 steps, Ladder B has 6 steps, and Ladder C has 9 steps. The employee wants to climb until she is standing on the top step of the ladder, and then reach for a shelf that is 2.8 m above the ground. Her shoulders are 135 cm above the ground while she is standing on the ground. If she wants her hands to be as close in height to her shoulders as possible while reaching for the shelf, which ladder should she use?

Solution. If she climbs to the top of ladder A, her shoulders will be $3 \times 25 + 135 = 210$ cm above the ground. If she climbs to the top of ladder B, her shoulders will be $6 \times 25 + 135 = 285$ cm above the ground. If she climbs to the top of ladder C, her shoulders will be $9 \times 25 + 135 = 360$ cm above the ground. We see that on Ladder B, she is by far the closest to being 2.8 metres, or 280 cm, above the ground.

Answer to B8: Ladder B