



Challenging Problems

Worked Example 1

Thirty blue buttons and forty-five yellow buttons need to be placed in bags so that each bag has the same number of buttons. What is the greatest possible number of bags needed?

Buttons	Possible numbers of bags needed
30 blue	1, 2, 3, 5, 6, 10, 15
45 yellow	1, 3, 5, 9, 15

The greatest possible number of bags needed is **15**.

Worked Example 2

Mrs. Oliver has a number of tarts. If she gives 3 or 4 tarts to each child, there will be 1 tart left over each time. If she gives 5 tarts to each child, she will have no tarts left over. What is the smallest number of tarts that Mrs. Oliver could have?

The number of tarts must be a multiple of 5 that leaves a remainder of 1 when divided by 3 or 4.

Multiple of 5	5	10	15	20	25
Remainder when divided by 3	2	1	0	2	1
Remainder when divided by 4	1	2	3	0	1

The smallest number of tarts that Mrs. Oliver could have is **25**.

7. Mr. Thomas has some erasers. When he gives 4 erasers or 5 erasers to each student, he has 2 erasers left. There are no erasers left when he gives 6 erasers to each student. What is the least number of erasers Mr. Thomas could have?

8. Some of Mr. Edward's students want to buy him a gift. If each of them pays \$2, they will be short of \$4 for the gift. If each of them pays \$3, there will be an extra \$3. How much does the gift cost?



9. Students were selected from a school's fourth grade classes to take part in a science contest and a spelling contest. From one class, 9 students were selected for the science contest and 3 for the spelling contest. For each of the remaining classes, 4 students were selected for the science contest and 6 for the spelling contest. The number of students who were selected to take part in both contests is the same. What is the smallest possible number of fourth grade classes?



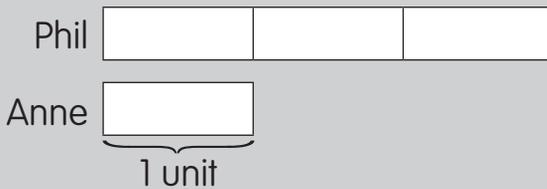
Challenging Problems

Worked Example 1

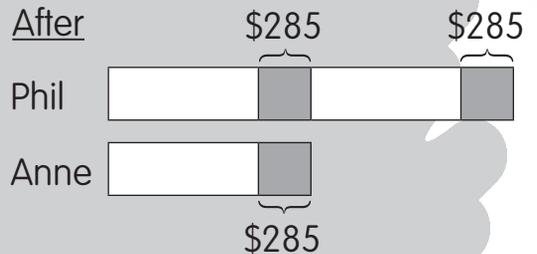
Phil had 3 times as much money as Anne. After Phil gave \$285 to Anne, he had twice as much money as she did. How much money did Phil have at first?

Method 1

Before



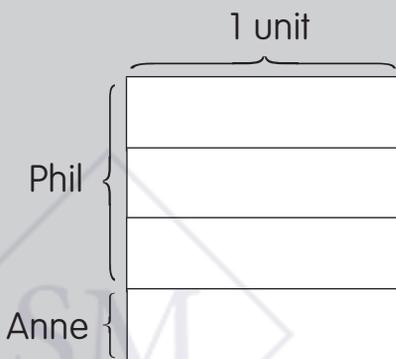
After



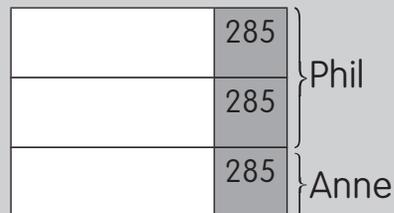
1 unit $\longrightarrow 3 \times \$285 = \$855$
 3 units $\longrightarrow 3 \times \$855 = \$2,565$
 Phil had **\$2,565** at first.

Method 2

Before



After



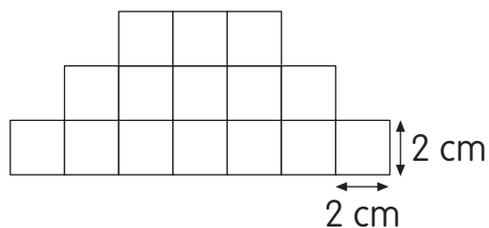
From the model,
 1 unit $\longrightarrow 3 \times 285 = 855$
 3 units $\longrightarrow 3 \times 855 = 2,565$
 Phil had **\$2,565** at first.



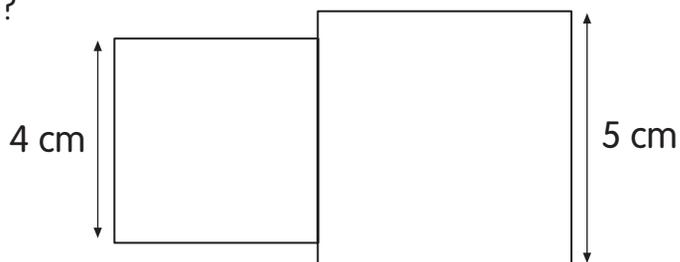
Practice Questions

Answer all questions. Show your work and write your statements clearly.

1. The figure is made up of 2 cm squares. Find its
(a) area,
(b) perimeter.

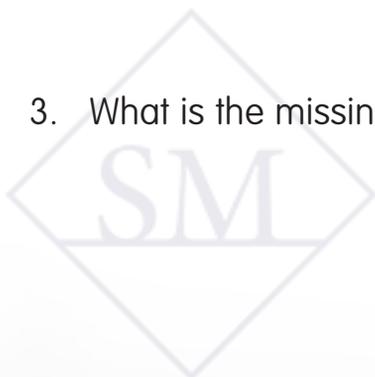


2. The figure below is made up of two squares. What is the perimeter of the figure?

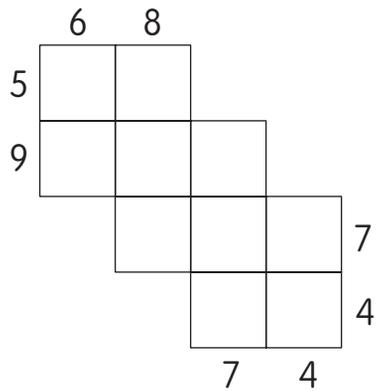


3. What is the missing number in the box?

$$\frac{2}{6} = \frac{\boxed{}}{9}$$



5. Fill each box with the digits 1, 2, 3, or 4 only. The sum of the numbers in each row or column is shown at the sides. No numbers are to be repeated in each row or column.



6. The shaded figure is made into rectangle $ABHG$. What is the length of BH ? All angles are right angles.

