

# Answers to Task Cards Open-Ended Problem Solving

## Problem 55

A rectangle has four sides, four angles, straight sides, two diagonals, two axes of symmetry. All its angles are right angles. Opposite sides are equal. It is a 2D plane shape.

## Problem 56

Teacher to check all models. Pupils should be encouraged to be creative when building their models.

## Problem 57

- 4 cm, 4 cm, 8 cm
- 4 cm, 5 cm, 7 cm
- 4 cm, 6 cm, 6 cm
- 5 cm, 6 cm, 5 cm

## Problem 58

Some solutions could be:

- $3456 \times 2 = 6912$
- $3470 \times 2 = 6940$
- $3498 \times 2 = 6996$
- $3501 \times 2 = 7002$

Encourage pupils to make a list of other 'close' solutions.

## Problem 59

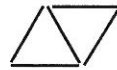
- $3 + 2 + 1 = 6$
- $3 \times 2 = 6$
- $3 \times 2 \times 1 = 6$
- $6 \div (3 \times 1) = 2$
- $6 \div (2 \times 1) = 3$
- $6 \div (2 \times 3) = 1$
- $6 - (2 + 3) = 1$

## Problem 60

$$\begin{array}{r} 7 \boxed{8} 9 \\ + \boxed{5} 5 \boxed{6} \\ \hline \boxed{1} 3 4 5 \end{array}$$

There is only one solution.

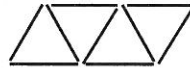
## Problem 61



5 toothpicks / 2 triangles



7 toothpicks / 3 triangles



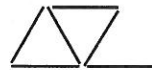
9 toothpicks / 4 triangles



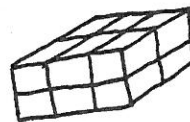
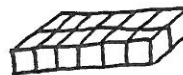
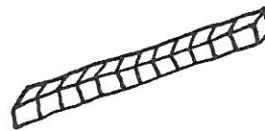
11 toothpicks / 5 triangles

As the odd number of toothpicks increases, a new triangle is added each time. For 21 toothpicks there will be  $(21 - 1) \div 2 = 10$  triangles.

If there is an even number of toothpicks, there will always be one side left over in this pattern.



## Problem 62



The volume is the same for each prism.

## Problem 63

In most cases, the pupil will be much shorter than 170 cm, so the other two people will have to be taller than 170 cm. Verify that the pupil worked out that the total heights would be 510 cm. It would be a valuable exercise to discuss the answers to this problem as a class.