Discussion Problems
Step 5: Formulae

National Curriculum Objectives:

Mathematics Year 6: (6A1) Express missing number problems algebraically
Mathematics Year 6: (6A2) Use simple formulae
Mathematics Year 6: (6A4) Find pairs of numbers that satisfy an equation with two unknowns
Mathematics Year 6: (6A5) Enumerate possibilities of combinations of two variables

About this resource:

This resource has been designed for pupils who understand the concepts within this step. It provides pupils with more opportunities to enhance their reasoning and problem solving skills through more challenging problems. Pupils can work in pairs or small groups to discuss with each other about how best to tackle the problem, as there is often more than one answer or more than one way to work through the problem.

There may be various answers for each problem. Where this is the case, we have provided one example answer to guide discussion.

We recommend self or peer marking using the answer page provided to promote discussion and self-correction.

More Year 6 Algebra resources.

Did you like this resource? Don't forget to review it on our website.

Formulae

1. Fleur the Florist is putting together a bouquet of flowers for a client.

The client has requested that the bouquet must include at least three different types of flowers, but no more than 10 flowers in total.

Flora says,

The formula for the bouquet of flowers that I have created is:

$$b = 2d + 6c + 2o$$

The total cost of the bouquet is £2.70.

Type of flower	Cost per flower
Azalea (a)	33p
Daisy (d)	29p
Carnation (c)	25p
Begonia (b)	27p
Orchid (o)	31p

Explore other possible formulae to create different types of bouquets.
Use the formulae to work out the total cost of the bouquets created.

DP

2. Hans and Sofia are comparing the distances that they have run in the past week.

Hans, who lives in Germany, ran 24.01km.

Sofia, who lives in the UK, ran more than $12\frac{1}{2}$ miles, but less than 17.

She says,

I'm not too sure whether I ran a greater distance in comparison to Hans or not…

All I know is that the formula to convert miles to km is:

$$km = m \times \frac{8}{5}$$

What distance could Sofia have run? Give your answer in both km and miles.

Investigate and explain whether it was possible that Sofia ran a greater distance than Hans.

DP

Formulae

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Explore other possible formulae to create different types of bouquets.
Use the formulae to work out the total cost of the bouquets created.
Various answers, for example: The total cost of a bouquet of flowers could be £3.06 using the following formula: $b = 5d + 3a + 2o$

DP

2. Hans and Sofia are comparing the distances that they have run in the past week.

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She says,

I'm not too sure whether I ran a greater distance in comparison to Hans or not…

All I know is that the formula to convert miles to km is:

$$km = m \times \frac{8}{5}$$

What distance could Sofia have run? Give your answer in both km and miles.
Various answers, for example: Sofia could have run 16 miles, or 25.6km.
Investigate and explain whether it was possible that Sofia ran a greater distance than Hans.
Various answers, for example: It is possible for Sofia to have run a greater distance than Hans, but only if she ran more than 15 miles; this is because 15 miles is equal to 24km when converted.

DP