



Scale factor and ratio problems

Understand and use ratio to solve problems
Solve problems involving scale factors

1 A TV company plans its evening schedules in the following ratios:

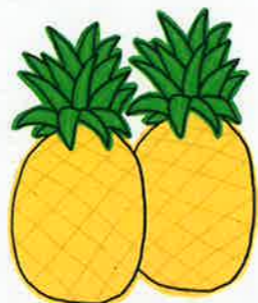
Films and drama : Comedy and quiz shows : News and current affairs = 4 : 2 : 3

An evening runs from 6:00 p.m. to midnight. There are 120 minutes of 'News and current affairs' each evening. Find the number of minutes for:

- a Films and drama b Comedy and quiz shows

2 Work out the answer to each question.

- a 8 apples cost £3.60, how much will 5 apples cost?
b 3 mangoes cost £3.90, how much will 4 mangoes cost?
c 12 lemons cost £3.00, how much will 7 lemons cost?
d 2 pineapples cost £3.70, how much will 3 pineapples cost?



You will need:

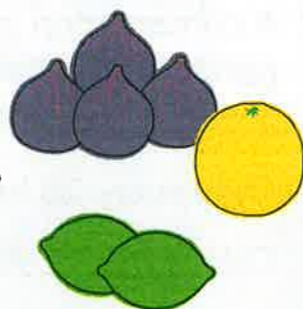
- 1 cm squared paper
- ruler

1 Draw each of the shapes described below on 1 cm squared paper and then enlarge each one with a scale factor of 2.

- a 2 cm square
b 1 cm × 4 cm rectangle
c right-angled triangle with the right angle between sides of length 2 cm and 3 cm.

2 Work out the answer to each question.

- a 12 oranges cost £2.88, how much will 5 oranges cost?
b 4 figs cost £3.40, how much will 3 figs cost?
c 3 grapefruit cost £2.04, how much will 4 grapefruit cost?
d 5 bananas cost £1.15, how much will 9 bananas cost?
e 6 limes cost £1.74, how much will 7 limes cost?



3 Here are some facts about a school of 450 children. Find the ratios and change them to their simplest forms. You will need to use your answer to Question a to work out Questions b and c.

a 200 of the 450 children are boys. Find the ratio of boys to girls.

b 75 girls play in a netball or hockey team. Find the ratio of 'girls in a team : girls not in a team'.

c 75 boys play in a football or cricket team. Find the ratio of 'boys in a team : boys not in a team'.

d 150 children walk to school. Find the ratio of 'children who walk : children who do not walk'.

e 200 children learn a musical instrument. Find the ratio of 'children who play a musical instrument : children who do not play a musical instrument'.

f Ask your teacher if you can investigate some of these ratios for your school.

4 A large supermarket chain has 1035 stores throughout Britain.

- a 20% of the stores have a petrol station attached. How many stores is this?
b 1 in 3 stores has an in-store bakery. Of the stores with a bakery, 2 out of every 5 has a cafe attached. How many stores are there with both a bakery and cafe?

Challenge 3

1 Look at this selection of flags from countries in Africa. Estimate the ratio of the area of each colour for each flag. Some are harder than others.

You will need:

- 1 cm squared paper
- ruler
- coloured pencils



a Nigeria



b Republic of Congo



c Rwanda
(*Don't include the yellow sun)



d Uganda
(*Don't include the crested crane)



e Cape Verde
(*Don't include the yellow circle of stars)

2 Using squared paper, design your own flag using three colours in the ratios 2 : 1 : 5.

*Although you are not including the details for the maths task, they are important features of the flags. The crane is the national symbol of Uganda and it is standing on one leg to symbolise that the country is not stationary, but moving forward. The sun on the Rwandan flag represents enlightenment. The circle of ten stars on the Cape Verde flag portrays the ten main islands.

