Ratios

Mixing Colours

> We are learning how to compare ratios and proportions.

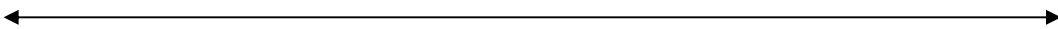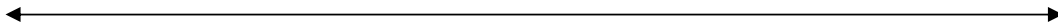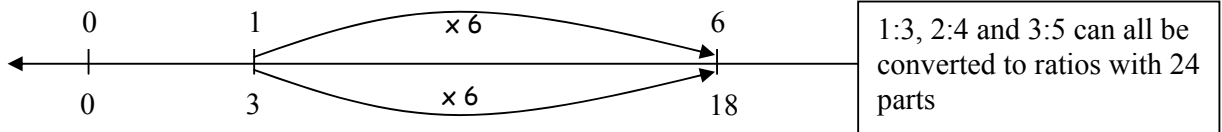## Exercise 1:

Three recipes for orange paint are:

     X.   1 part red to 3 parts yellow (1:3)
     Y.   2 parts red to 4 parts yellow (2:4)
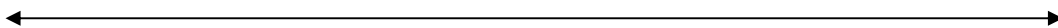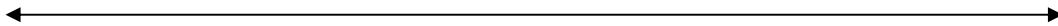   Z.   3 parts red to 5 parts yellow (3:5)

1)   A large pot of paint needs to be coloured. Each recipe can be used to make the pot, but regardless of the recipe the same total amount of colour should be used. Use the number lines to help work out the amount of each colour needed by finding equivalent ratios that all have the same number of parts. The first one is done for you:

| 1:3, 2:4 and 3:5 can all be converted to ratios with 24 parts |

Which recipe has the darkest orange (the most red)?

2)   Three recipes for purple are:
     X.   3 parts red to 5 parts yellow (3:5)
     Y.   5 parts red to 7 parts yellow (5:7)
     Z.   4 parts red to 11 parts yellow (4:11)

Which recipe gives the darkest purple (most red)?

3)   Explain why we have to change the ratios in this way before we can compare which gives the "strongest' colour?

Exercise 2:

1) Circle the blue to yellow ratio in each pair that makes the darker shade of green (the most blue).

    a)   4:5 or 7:11   b)   5:7 or 11:13   c)   7:8 or 13:17

    d)   7:11 or 24:30   e)   9:11 or 29:31

2) Circle the red to yellow ratio in each pair that makes the darker shade of orange.

    a)   2:5 or 19:30   b)   3:5 or 26:30   c)   4:5 or 18:27

    d)   5:6 or 29:37   e)   6:7 or 23:29

Mixing colours
Answers

Exercise 1

Use the number lines to equalise the size of these ratios.

```
   0        1          × 6              6
   ├────────┼───────────────────────────┤
   0        3          × 6             18

   0        2                          8
   ├────────┼───────────────────────────┤
   0        4                         16

   0              3                    9
   ├──────────────┼─────────────────────┤
   0              5                   15
```

Which recipe has the darkest orange (the most red)?   **Z (3:5)**

2)   Which recipe gives the darkest purple (most red)?   **Y (5:7)**

3)   The purpose of finding equivalent ratios (with the same number of parts) is so we can compare similar things. Originally, the 'whole' in each mix is different. For the orange paints
   X.   1 parts red to 3 parts yellow (1:3)   is like a 4 Litre tin of paint
   Y.   2 parts red to 4 parts yellow (2:4)   is like a 6 Litre tin of paint
   Z.   3 parts red to 5 parts yellow (3:5)   is like an 8 Litre tin of paint
   In each case the size of the tin is different so the strength of the colours is not easy to compare

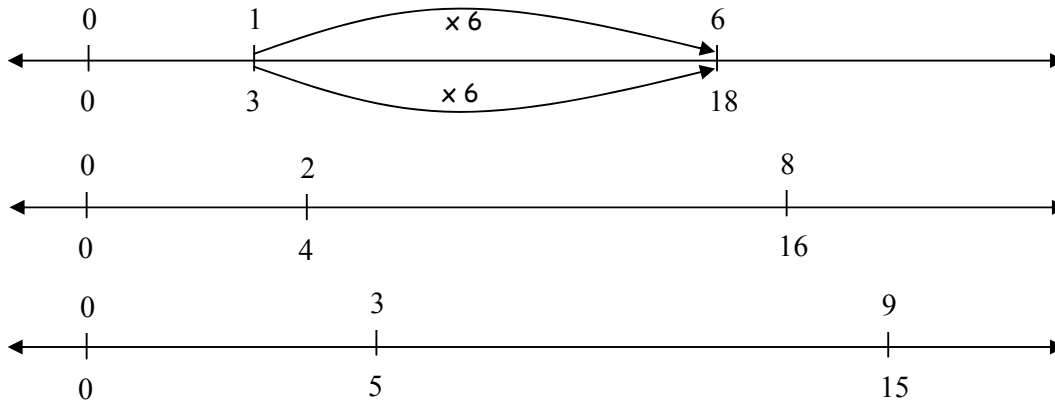# Exercise 2

1)   Circle the blue to yellow ratio in each pair that makes the darker shade of green (the most blue).
   b)   (4:5) or 7:11   b)   5:7 or (11:13) c)   (7:8) or 13:17
   d)   7:11 or (24:30) e)   9:11 or (29:31)

2)   Circle the red to yellow ratio in each pair that makes the darker shade of orange.
   a) 2:5 or (19:30) b)   3:5 or (26:30) c)   (4:5) or 18:27
   d) (5:6) or 29:37 e)   (6:7) or 23:29