## 38-42

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12 is  $\frac{3}{2}$  of what number? 12 is 375 of what number? 12 is  $37\frac{1}{2}$ % of what number?

These examples are generally best analysed by common fractions under the unitary method; but pupils should exercise their judgment as to the methods they employ.

Compare the following :--

42-45

Find the number of which

59 is $66\frac{2}{3}$	59 is $8\%$	34 is 17%
$\frac{2}{3} = 59$	$\frac{8}{100} = 59$	$17^{\circ} = 34$
$\frac{1}{3} = \frac{50}{2}$	$\frac{1}{100} = \frac{50}{8}$	1% = 2
$\frac{3}{3} = \frac{5.9 \times 3}{2}$	$\frac{100}{100} = \frac{59 \times 100}{8}$	100% = 200

**XV.** Derived Case.—To find the base when the amount (or the difference) and rate are given.

Amount = Base + Percentage. Difference = Base - Percentage.

The base is represented by 1, or by 100%, or by  $\frac{199}{188}$ .

The analysis here demands an additional step, *i.e.*, to find the rate per cent. represented by the given number. If there has been an increase or gain this will be found by adding the per cent. of increase to 100%. If there has been a decrease or loss, this will be found by subtracting the per cent. of decrease from 100%.

When the rate per cent. representing the amount or difference has been found, solve the problem as in **XIV**.

1. 36 is  $12\frac{1}{2}$ % more than what number ? Base = 1 Increase =  $\frac{1}{8}$  36 is  $\frac{9}{8}$  of what number ? Amount =  $\frac{1}{1\frac{1}{8}} = \frac{9}{8}$ 

2. My flock of sheep increased 8%. I then had 324. How many had I at first?

Amount = 100% + 8% = 108%. 324 sheep is  $\frac{108}{100}$  of what number?