

Understanding Percentage

Concept Lecture – 1

- ① % ✓
- ② Int ✓
- ③ P&L ✓

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Important Basic calculations for Percentage:

How to calculate $x\%$ of y :

- Unitary method
- Basic format
- Percentage pyramid

$$\begin{array}{r} 588 \\ +588 \\ \hline 6468 \end{array}$$

$$350 - 35 = 315$$

$$546 - 23.4 = 24$$

$$522.6$$

1. 30% of 420 = 126
2. 40% of 385 = 154
3. 22% of 480 = 105.6
4. 53% of 720 = 381.6
5. 38% of 450 = 171
6. 47% of 240 = 112.8
7. 45% of 1180 = 531
8. 77% of 840 = 646.8
9. 67% of 780 = 522.6
10. 90% of 350 = 315



Relation between Fractions & Percentage:

$$\frac{1}{12} = 8\frac{1}{3}\% = 8.33\% \quad \frac{5}{12} = 41.66\% \quad \frac{7}{12} = \underline{58.33\%} \quad \frac{11}{12} = 91.66\%$$

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$$\frac{1}{6} = 16.66\% \quad \left(\frac{5}{6}\right) = 83.33\%$$

$$\frac{1}{8} = 12.5\% \quad \frac{3}{8} = 37.5\% \quad \frac{5}{8} = 62.5\% \quad \left(\frac{7}{8}\right) = 87.5\%$$



Calculate the following:

1. 16.66% of 216 = $\frac{1}{6} \times 216 = 36$
2. 37.5% of 640 = $\frac{3}{8} \times 640 = 240$
3. 33.33% of 150 = 50
4. 83.33% of 144 = 120
5. 66.66% of 270 = 180
6. 28.56% of 980 = 280
7. 87.5% of 1280 = 1120
8. 62.5% of 1360 = $\frac{5}{8} \times 1360 = 850$
9. 44.44% of 1350 = 600
10. 36.36% of 1320 = 480

$$150 \times \frac{1}{3}$$

$$\begin{array}{r} 24 \\ +44 \\ \hline \end{array} \times \frac{5}{8}$$

$$270 \times \frac{2}{3}$$

$$\begin{array}{r} 16 \\ +280 \\ \hline \end{array} \times \frac{7}{8}$$

$$\begin{array}{r} 15 \\ +350 \\ \hline \end{array} \times \frac{4}{9}$$

$$\begin{array}{r} 14 \\ 980 \\ \hline \end{array} \times \frac{2}{7}$$

$$\begin{array}{r} 12 \\ +320 \\ \hline \end{array} \times \frac{4}{11}$$

$$\frac{1}{5} = 20\%$$

$$\begin{array}{r} 6 \\ \hline 1380 \\ \hline 1150 \\ \hline 5 \end{array} \times \frac{20}{100} = 120\%$$

$$\begin{array}{r} 248 \\ \hline 1680 \\ \hline 1050 \\ \hline 15 \\ \hline 5 \end{array} \times \frac{20}{100}$$

Find X is what Percent of Y:

X	Y	
240	640	37.5%
800	1120	71.40%
1260	1620	77.77%
420	700	60%
1380	1150	120%
1680	1050	160%

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Find the percentage equivalent of following fractions:

$$\frac{5 \times 100}{17}$$

$$\frac{1}{6} = 16.66\% \quad \frac{1+6}{16}$$

$$\frac{1}{2} \times \frac{5}{8}$$

$$416\% = 4 \frac{1}{6}\% = \frac{1}{6} \times 25\% = \frac{1}{6} \times \frac{1}{4}$$

$$\frac{1}{3} \times 125 = \frac{1}{3} \times \frac{1}{8}$$

$$\frac{6.25}{37.5}$$

Fraction	%
$\frac{7}{16} = \frac{8}{16} - \frac{1}{16} = 50\% - 6.25\%$	43.75%
$\frac{9}{16} = \frac{8+1}{16} = 50\% + 6.25\%$	56.25%
$\frac{4}{15} = \frac{3+1}{15} = 20\% + 6.66\%$	26.66%
$\frac{1}{24} = \frac{1}{12} \times \frac{1}{2} = 8.33\% \times \frac{1}{2}$	4.16%
$\frac{5}{16} = \frac{4+1}{16} = 25\% + 6.25\%$	31.25%
$\frac{5}{24} = \frac{4+1}{24} = 16.66\% + 4.16\%$	20.83%

Percentage more or less:

1. 30% more than 250=

2. 42% more than 480=

3. 37.5% more than 960=

4. 25% less than 440=

5. 16.66% less than 216=

6. 28.56% less than 1120=

$$216 - \frac{1}{6} \text{ of } 216 = 180$$

Handwritten calculation for 16.66% less than 216:
16 + 20
36
 $216 - \frac{1}{6} \text{ of } 216 = 180$

$$1120 - \frac{2}{7} \text{ of } 1120 = 800$$

Handwritten calculation for 28.56% less than 1120:
 $1120 - \frac{2}{7} \text{ of } 1120 = 800$

Handwritten conversion of percentages to fractions:
 $\frac{1}{6}$ and $\frac{2}{7}$

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Percentage more or less (multiplying factor):

% change - *multiplying factor*

16.66% ↑

$$\frac{7}{6}$$

$$1 + \frac{3}{8} = \frac{11}{8}$$

$$1 - \frac{3}{8} = \frac{5}{8}$$

37.5% ↑

$$1 + \frac{3}{8} = \frac{11}{8}$$

$$1 + \frac{2}{7} = \frac{9}{7}$$

$$1 - \frac{2}{9} = \frac{7}{9}$$

22.22% ↑

$$\frac{11}{9}$$

$$1 + \frac{3}{5} = \frac{8}{5}$$

$$1 - \frac{4}{5} = \frac{1}{5}$$

$$1 - \frac{3}{7}$$

12.5% ↓

$$\frac{7}{8}$$

42.84% ↓

$$\frac{4}{7}$$

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Calculate the following:

- 16.66% more than 216 = $\frac{7}{6} \times 216 = 252$
- 37.5% more than 640 = 880
- 33.33% more than 150 = $\frac{4}{3} \times 150 = 200$
- 83.33% more than 144 = 264
- 66.66% more than 270 = 450
- 28.56% less than 980 = 700
- 87.5% less than 1280 = $\frac{1}{8} \times 1280 = 160$
- 62.5% less than 1360 = $\frac{3}{8} \times 1360 = 510$
- 44.44% less than 1350 = 750
- 36.36% less than 1320 = 840

$$1 - \frac{4}{9} = \frac{5}{9}$$

$$15 + 350 \times \frac{5}{9}$$

$$1 - \frac{4}{11} = \frac{7}{11} \times 1320$$

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