Percents

- Converting percents to fractions

$$X\% \rightarrow \frac{X}{100} \qquad \text{Given: } X = 20$$

$$20\% \rightarrow \frac{20}{100} = \frac{1}{5} = \frac{2}{10} = \ldots$$

- Converting fractions to percents (decimals)

$$\frac{1}{20} = 0.05 \cdot 100 \quad (\text{"Move the decimal 2 places to the right"})$$

$$= 5\% \rightarrow \frac{5}{100}$$

$$\frac{1}{20} = 5\% = \frac{5}{100} \implies \frac{1}{20} = \frac{5}{100}$$

- factors 5: 1, ⑤

"5 is prime"

$$5 \div 5 = 1$$
$$100 \div 5 = 20$$

- Reducing the fraction does not change the value, only the representation

$$\frac{1}{20} \rightarrow \text{percent} \qquad \frac{1}{20} = \frac{n}{100}$$

$$\frac{1}{20} \cdot \frac{5}{5} = \frac{n}{100}$$

$$\frac{5}{100} = \frac{n}{100} = 5\%$$

- Discounts / Sales tax (Equation)

6.5% sales tax   B : Total bill $2.30
↓   ↓
"rate" R   "base" B

0.065 · base
                         P : Result

$P = R \cdot B$ R = ? = R
$P = 0.065 \cdot 2.30$ Q: What if R is missing
                          and we are given P and B?
$P = \$0.1495$
"15 cents" $P = R \cdot B$

Total ⟹ P + B   P = 0.15   R = ?
$2.45 = $0.15 + $2.30   B = 2.3

$P = R \cdot B$ $0.15 = R \cdot 2.3$

                            $0.15 = R(2.3) = 2.3R$

$\dfrac{P}{B}$ ⟶ $0.15 = R \cdot 2.3$

                            $\dfrac{0.15}{2.3} = R = 0.065$

                            $\dfrac{P}{B} = R , R = \dfrac{P}{B}$
- 6.5% rate
- P = 0.15 $B = ? = \dfrac{P}{R} = 2.30$

                            $B = \dfrac{P}{R}$