

- (4.) 2 days work of A = 3 days work of C;
 and 5 " B = 4 " C.
 \therefore 8 " A = 12 " C;
 and 15 " B = 12 " C.
 Hence 8 " A = 15 " B;
 and 1 " A = $1\frac{5}{8}$ " B.

Therefore 36 days work of A = $1\frac{5}{8} \times 36$, or $67\frac{1}{2}$ days' work of B, or B will require $11\frac{1}{4}$ weeks to complete what A can perform in 6 weeks.

- (5.) Glass A contains 3 parts water + 1 part spirits = 4 parts.

Glass B contains 4 parts water + 3 parts spirits = 7 parts.

$\frac{3}{4}$ of water + $\frac{1}{4}$ of spirit = 1,
 and $\frac{4}{7}$ of water + $\frac{3}{7}$ of spirit = 1.
 therefore $1\frac{9}{28}$ of water + $1\frac{2}{28}$ of spirit = 2.

Or the mixture consists of $1\frac{9}{28}$ of water, and $1\frac{2}{28}$ of spirit.

- (6.) The capacity of the cistern may be represented by 1. Pipe A fills $\frac{1}{2}$ in 1 hour. Pipe B fills $\frac{1}{4}$ in 1 hour. A and B fills $\frac{7}{12}$ in 1 hour, but C empties the cistern in 1 hour. Hence the quantity poured out being greater than that poured in during the same time, the cistern will become empty in a certain time. At 3 o'clock, when C is opened, the cistern contains $\frac{2}{3} + \frac{1}{4}$, or $1\frac{1}{12}$. And in 1 hour, $1 - \frac{7}{12} = \frac{5}{12}$ in excess of quantity poured out above that poured in. Hence $1\frac{1}{12} \div \frac{5}{12} = 1\frac{1}{5} = 2\frac{1}{5}$ hours. The vessel will be empty in $2\frac{1}{5}$ hours after 3 o'clock, or 12 minutes past 5 o'clock.

- (7.) $\frac{1}{12}$ of a day. (8.) 9 d. 20 h. 15 m.

- (9.) There are 11 intervals between 1 and 12 strikes. The interval of two strikes of the first clock is $3\frac{5}{11}$ sec.,