

Total degree in 1 hour = 360°

$$= \frac{360}{12} = \frac{30^\circ}{5} = 6^\circ \text{ per } \underline{\text{min.}}$$

i) In 60 minutes the minute hand gains 55 minutes on the hour hand.

ii) In every hour, both the hands coincide once.

iii) Angle traced by hour hand in 12 hrs = 360°

iv) Angle traced by minute hand in 60 min = 360°

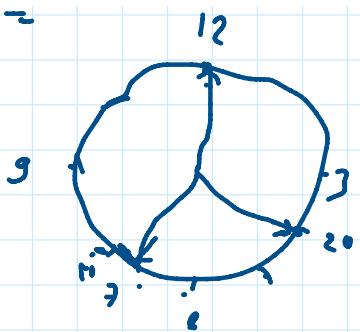
v) \therefore " " $5 \text{ min.} = ?^\circ$

vi) \therefore " " $1 \text{ min.} = 6^\circ$

\Rightarrow Too fast and too slow :- If it is indicate 8:15, when the correct time is 8, it said to be 15 mins fast.

\rightarrow 7:45 when correct time is 8.. it is said to be 15 mins slow:

$\underline{\text{Ex}}$ find the angle made by hour hand and minute hand at 7:20?



$$\frac{1}{60} \times 30^\circ = 1^\circ$$

$$30^\circ \times 4 = 120^\circ$$

$$30^\circ \times 2 = 210^\circ + 10^\circ = 220^\circ$$

$$\begin{array}{r} -120 \\ \hline 100^\circ \end{array}$$

S How much part of one hour is equal to the time duration of 4:56 at morning to 5:32 at evening?

a) $\frac{1}{4}$ b) $\frac{3}{4}$

c) $1\frac{3}{5}$ d) $\frac{1}{2}$

$$4 + 32 = \frac{36}{60} = \frac{3}{5}$$

S 6:50 to 7:38

$$10 + 78 = \frac{48}{60} = \frac{4}{5} \text{ hr}$$

S one day in a clock, correct time set at 8 am in the morning, this clock runs 10 mins faster in 24 hours. Next day when clock shows 1 o'clock they

What will be the correct time?

$\rightarrow 8 \rightarrow 8 \text{ AM} \rightarrow 24 \text{ hours}$

10 min
2 min

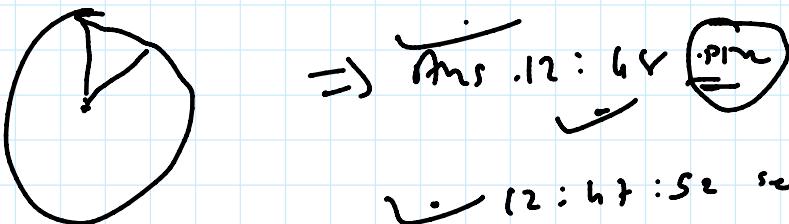
8 AM \rightarrow 1 PM

5 hours

$24 \rightarrow 10 \text{ min}$

$5 \rightarrow ?$

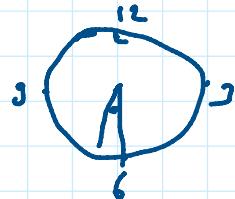
$$\frac{5 \times 10}{24} = \frac{50}{24} \\ = 2.08 \text{ min}$$



$\therefore 12:05:52 \text{ second}$

Eg Find the angle b/w min hand and hour hand
at a clock when time is $6:30$?

\rightarrow Hour hand
=



$$6:30 \Rightarrow 6 \text{ hours} + 30 \text{ min} \Rightarrow \frac{20}{60} \times 30 \\ = 10$$

$$30 \times 6 = 180^\circ + 15^\circ = 195^\circ$$

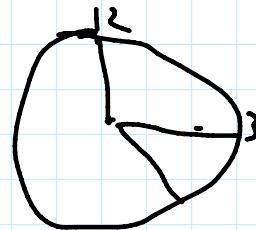
minut hand

$$30 \text{ mins} = 30^\circ \times 6 = 180^\circ$$

$$195^\circ - 180^\circ = 15^\circ$$

Sx. find the angle 3:25

=



hour hand

$$\Rightarrow 3:25 = 3 \text{ hours} + 25 \text{ mins} \Rightarrow \frac{25}{60} \times 30^\circ = 12.5^\circ$$

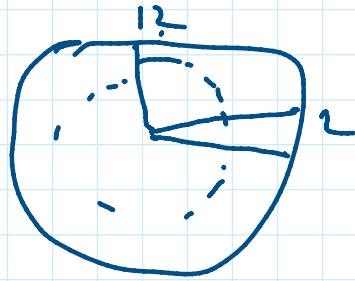
$$30^\circ \times 3 = 90^\circ + 12.5^\circ = 102.5^\circ$$

minute hand

$$25 \text{ mins} = 5 \times 3^\circ = 15^\circ$$

$$150^\circ - 102.5^\circ = 47.5^\circ \text{ or } 47\frac{1}{2}^\circ$$

Sx At what time between 2 and 3 o'clock will the hands of a clock be together?

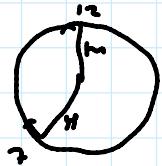


\rightarrow At 2 o'clock the hour hand is at 2 and minute hand is at 12. It's 60° min space apart.

55 minutes are gained by it in 60 min

$$\therefore 10 \text{ minutes will be gained in } \left(\frac{60 \times \frac{10}{11}}{\frac{55}{11}} \right) = \frac{120}{11}$$

ans

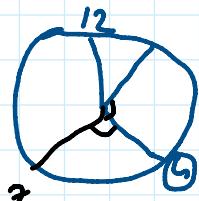


$$= 10 \frac{10}{11} \text{ mins,}$$

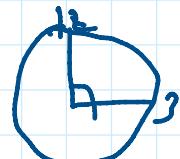
ans. is $10 \frac{10}{11}$ mins P.C.W. 2.

Ex At what time b/w 4 & 5 o'clock will the hands of a clock be at right angle?

A) At 4 o'clock minute hand will be,



20 mins. Space behind hour hand



Case 1:- min gain ($20 - 15$) = min space

55 min space will gain in 60 min

$$5 \text{ min } " " " \left(\frac{5 \times 60}{60} \right) = 5 \frac{5}{11} \text{ min}$$

Case 2 :- min gain ($20 + 15$) = 35 min

55 min space will gain in 60 min

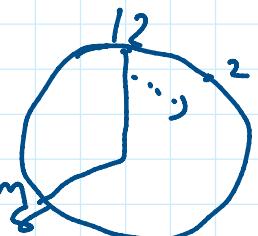
$$35 \text{ min } " " " \left(\frac{35 \times 60}{60} \right) = 38 \frac{2}{11} \text{ min}$$

The right answer at $38 \frac{2}{11}$ min past 4

Ex find out what time betⁿ 3 and 4 o'clock

will the hands of a clock be in the same

Straight line but not together!



55 min from 3 times in 60 min

$$10 \text{ min } \dots \left(\frac{10 \times 60}{60} \right) = 10 \frac{10}{11} \text{ min}$$

straight line at $10 \frac{10}{11}$ past 3.