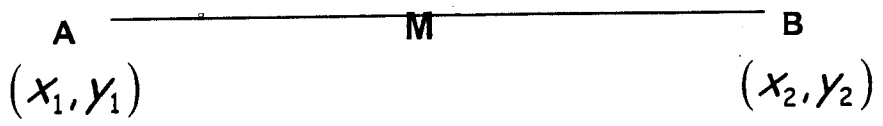
10 Academic Math **3. Endpoints of a Line Segment**



1. Determine the end-point of the line segment which has one end-point at **(4, -6)** and a mid-point at **(7 , 3)**.

2. Determine the end-point of the line segment which has one end-point at **(0, 5)** and a mid-point at **(-3 , 4)**.

3. Determine the end-point of the line segment which has one end-point at **(-3, -1)** and a mid-point at **(2 , -5)**.

4. Determine the end-point of the line segment which has one end-point at **(5, 2)** and a mid-point at $\left(\frac{1}{2}, \frac{3}{5}\right)$.

Endpoints of a Line Segment - Answers.

1. $(7,3) = \left(\frac{x+4}{2}, \frac{y-6}{2}\right)$

$7 = \frac{x+4}{2}$ $\quad$ $3 = \frac{y-6}{2}$

$14 = x+4$ $\quad$ $6 = y-6$

$10 = x$ $\quad$ $12 = y$

$\therefore$ the endpoint is $(10,12)$

2. $(-3,4) = \left(\frac{x+0}{2}, \frac{y+5}{2}\right)$

$-3 = \frac{x}{2}$ $\quad$ $4 = \frac{y+5}{2}$

$-6 = x$ $\quad$ $8 = y+5$

$3 = y$

$\therefore$ $(-6,3)$ is the endpoint

3. $(2,-5) = \left(\frac{x-3}{2}, \frac{x-1}{2}\right)$

$2 = \frac{x-3}{2}$ $\quad$ $-5 = \frac{x-1}{2}$

$7 = x$ $\quad$ $-9 = y$

$\therefore$ $(7,-9)$ is the endpoint.

4. $\left(\frac{1}{2}, \frac{3}{5}\right) = \left(\frac{x+5}{2}, \frac{y+2}{2}\right)$

$\frac{1}{2} = \frac{x+5}{2}$ $\qquad$ $\frac{3}{5} = \frac{y+2}{2}$

$1 = x + 5$ $\qquad$ $\frac{6}{5} = y + 2$

$-4 = x$ $\qquad$ $\frac{6}{5} - 2 = y$

$\frac{6}{5} - \frac{10}{5} = y$

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

$\therefore \left(-4, -\frac{4}{5}\right)$ is the endpoint