

Subject: Slope-intercept Form (3-section)

Duration: 40mn

Aim: to use slope and intercepts to graph linear equations.

* x-intercept of a line is the value of x where the line crosses the x -axis

* y-intercept of a line is the value of y where the line crosses the y -axis.

Exm: Find x and y -intercept of the line $2x + 3y = 6$

$$\begin{aligned}\text{Find } x\text{-intercept } y=0 &\rightarrow 2x + 3 \cdot 0 = 6 \\ &2x = 6 \\ &x = 3\end{aligned}$$

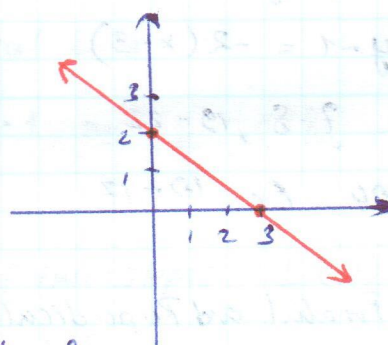
$$\begin{aligned}\text{Find } y\text{-intercept } x=0 &\rightarrow 2 \cdot 0 + 3y = 6 \\ &3y = 6 \\ &y = 2\end{aligned}$$

then let's draw the graph by intercepts;

The line crosses the x -axis at $(3,0)$

The line crosses the y -axis at $(0,2)$

Ex Pg 100, 1-4



* The linear equation written in slope-intercept form;

$$y = mx + b$$

↓ ↓
slope y-int.

Ex: Write each equation in slope-intercept form and find slope and y-intercept.

1) $y = 2x \rightarrow y = 2x + 0$; slope is 2 , y-int is 0

2) $3y = 5x \rightarrow y = \frac{5}{3}x + 0$, slope is $\frac{5}{3}$, y-int is 0

3) $2x + 3y = 10 \rightarrow 3y = -2x + 10$

$$y = -\frac{2}{3}x + \frac{10}{3} \rightarrow \text{slope is } -\frac{2}{3} \text{ and y-int is } \frac{10}{3}$$

Ex. Pg 100 5-8

* Slope-intercept form;

Exm: Write the equation of the line that passes through $(-1, 3)$ and $(3, -1)$

$$\text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{-1-3}{3-(-1)} = \frac{-4}{4} = -1$$

then the line with -1 as slope passes through $(-1, 3)$

$$\begin{aligned}y = mx + b &\rightarrow 3 = (-1) \cdot (-1) + b \\ &3 - 1 = b \\ &2 = b\end{aligned} \quad \left. \begin{array}{l} \\ \\ \end{array} \right\} \Rightarrow \begin{aligned}m &= -1 \text{ and } b = 2 \\ y &= -1 \cdot x + 2 \\ y &= -x + 2\end{aligned}$$

Ex Pg 100 10-12

H.W Pg 100

Ex: 13-20, 22-28

Subject: multiplying Algebraic Expressions (Section 3)

Duration: 40 mn x 2

Aim: how to multiply algebraic expressions

Special identities (Product of Binomials)

Perfect Squares; $(a+b)^2 = a^2 + 2ab + b^2 \rightarrow$ Square of sum

$(a-b)^2 = a^2 - 2ab + b^2 \rightarrow$ Square of difference

Difference of two squares; $(a+b)(a-b) = a^2 - b^2 \rightarrow$ sum x difference

Exercises: Pg 58 1-13, 43-47

H.W : Pg 58 15-27

Subject: Factoring by a common factor (Section 4)

Duration: 40 mn x 3

Aim: how to factor polynomials by using the GCF.

① Factoring by using GCF;

Exm: $8x^3 + 4x^2 - 6x$

$$\rightarrow 2 \cdot 4 \cancel{x} \cdot x^2 + 2 \cdot 2 \cancel{x} \cdot x - 2 \cdot 3 \cancel{x}$$

$$\rightarrow 2x \cdot (4x^2 + 2x - 3)$$

Exercises Pg 64 1-6

② Factoring out a common binomial factor;

$$\begin{aligned} \text{Exm: } & 8(x-2) + x^2(x-2) \\ & = (x-2)(8+x^2) \end{aligned}$$

Exercises Pg 64, 7-12

③ Factoring by grouping;

$$6x^3 - 9x^2 + 10x - 15$$

$$(6x^3 - 9x^2) + (10x - 15)$$

$$(\cancel{3} \cdot 2 \cdot x \cdot \cancel{x^2} - \cancel{3} \cdot \cancel{3} \cdot x) + (2 \cdot \cancel{5} \cdot x - 3 \cdot \cancel{5})$$

$$3x^2(2x-3) + 5(2x-3)$$

$$(2x-3)(3x^2+5)$$

Exercises Pg 64 13-24, 61+62

H.W Pg 64 25-48

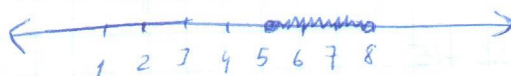
Subject: Compound Inequalities (sec. 7)

Duration: 40 mn X 3

Aim: to solve inequalities that contain either (AND) or (OR)

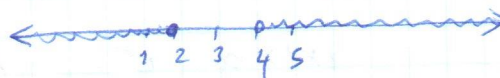
Exm: 1) $2 \leq x-3 < 5$ / $2 \leq x-3$ and $x-3 < 5$

$$5 \leq x < 8$$



$$2) \quad 2x \leq 4 \quad \text{OR} \quad 3x > 12$$

$$x \leq 2 \quad \text{OR} \quad x > 4$$



Exercises Pg 34 Ex 2-9 and 19-22

H.W. Pg 34 Ex 4-18

Subject: Absolute value equations and inequalities

Duration: 40 mn X 4

Aim: to solve an equation or an inequality that contains absolute value.

$|x| = 5$, the absolute value of a number is its distance from zero on a number line. For exm: $|-5| = 5$ means -5 is 5 units distance away 0.

$|x| = 5$, we have two answers $x = 5$ and $x = -5$

Absolute value equations;

Exm: 1) $|x| = 4 \rightarrow x = 4$ or $x = -4$

$$2) \quad |x-3| = 1 \rightarrow \begin{matrix} x-3=1 \\ \text{or} \\ x=4 \end{matrix} \quad \text{or} \quad \begin{matrix} x-3=-1 \\ \text{or} \\ x=-2 \end{matrix}$$

special cases:

1) $|x+3| = 0 \rightarrow$ there is one solution $x+3=0 \rightarrow x=-3$

2) $|x-2| = -4 \rightarrow$ there is no solution (Abs. value can not be negative)

Exercises: Pg 39 Ex 1-9

H.W. Pg 39 Ex 22-30

