Grade 9 - chapter 6 notes

To solve an equation use BEDMAS <u>backwards</u>

$$3n + 2 = 14$$
$$-2 \quad -2$$

* start with + and do the opposite

$$3n + \cancel{2} = 14$$
$$\cancel{-2} \quad -2$$

$$\Rightarrow 3n = 12$$
$$\div 3 \quad \div 3$$

* do opposite of x3

$$\Rightarrow \frac{\cancel{3}n}{\cancel{3}} = \frac{12}{3} \Rightarrow n = 4$$

*remember

$\frac{m}{4}$ is the same thing as saying $m \div 4$

$$\frac{m}{4} + 3 = 7.2 \Rightarrow -3 \text{ to both sides}$$

$$\frac{m}{4} + \cancel{3} = 7.2$$
$$\cancel{-3} \quad -3$$

$$\frac{m}{4} = 4.2 \Rightarrow \text{now x both sides by 4}$$

$$\cancel{4 \times \frac{m}{4}} = 4.2 \times 4$$

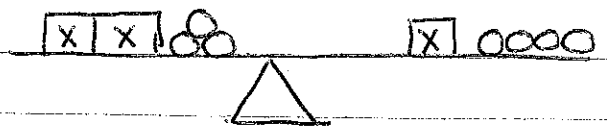
$$m = 16.8$$

<u>Inverse Operations</u>

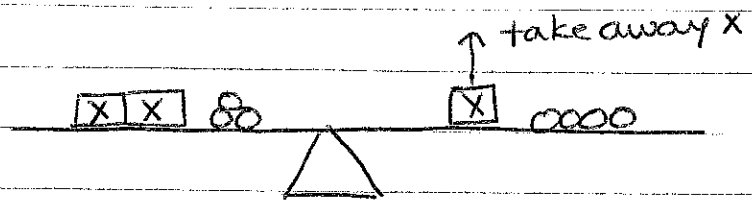
$\frac{m}{4} + 3 = 7.2$ write equation $\rightarrow$ $\boxed{m} \xrightarrow{\div 4} \boxed{\frac{m}{4}} \xrightarrow{+3} \boxed{\frac{m}{4} + 3}$

reverse steps $\boxed{16.4} \xleftarrow{\times 4} \boxed{4.2} \xleftarrow{-3} \boxed{7.2}$ * start here

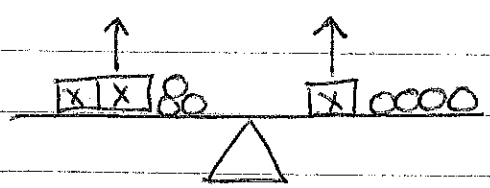
6.2 Solving equations using Balancing strategies

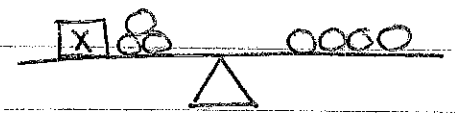


* move all [x] to one side + all o to other side.



* to move [x] you must take it away
- if you just took it away from one side the scale would look like this
- to keep balance you must take it away from both sides



=  ⇒ now remove 3 o from left + remember to take from both sides

⇒  or $x = 1$

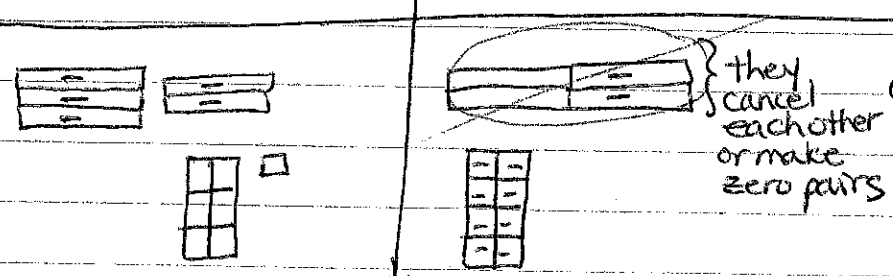
using algebra tiles

$-3x + 7 = 2x - 8$

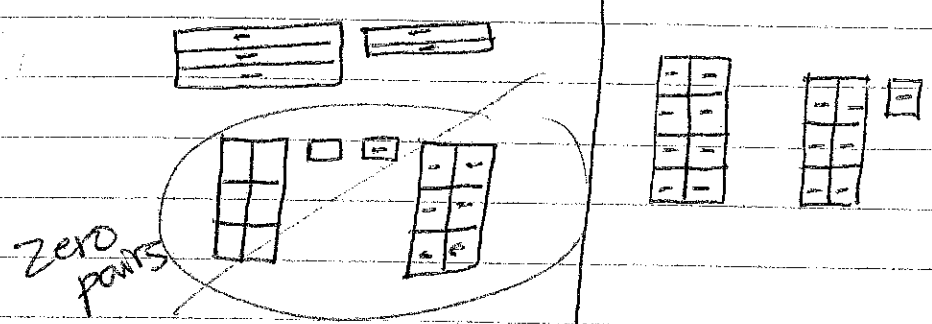
← this line is where = is in equation

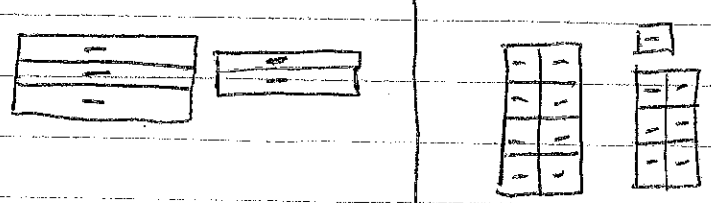
① move x's to one side

add $-2x$ to both sides



② add -7 to both sides

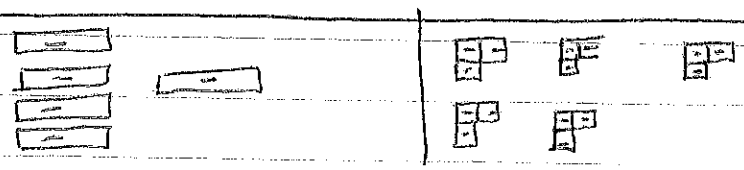




So $-5x = -15$

$\therefore 5x = 15$ or

$\frac{\circ}{\circ}$ in to 5 groups



$x = 3$

6.3 Linear Inequalities

** read left to right

$<$ less than

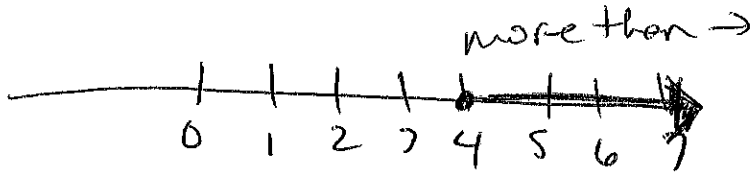
$>$ greater than

$\leq$ less than or equal to

$\geq$ greater than or equal to

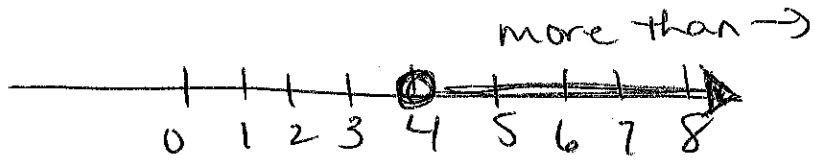
Using a number line to graph an inequality:

$x \geq 4$



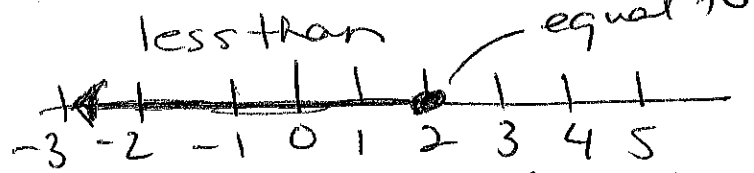
• means =

$x > 4$

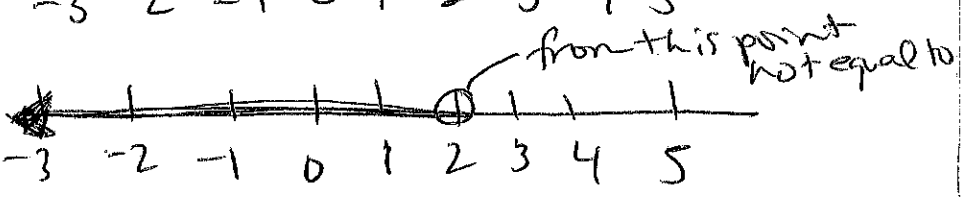


o means
not equal to but from this point

$x \leq 2$



$x < 2$



$\boxed{6.4}$ * when doing inequalities treat the $\geq$ > $\leq$ or < as an <u>equals</u> <u>except</u> when x/÷ by a negative.

$h + 3 < 5 \rightarrow h + 3 = 5$
$\quad\quad\quad\quad\quad\quad -3 \quad -3$

$h < 2 \longleftarrow h = 2$

plug back in!

If an inequality ends up looking like this:

$6 \geq x \rightarrow$ read right to left + rearrange

$x \leq 6$

$\boxed{6.5}$ To x or ÷ by a number (positive) answer remains the same

$-1 < 6 \Rightarrow -1(3) < 6(3)$
$(x+3) \quad -3 < 18$

$-1 < 6 \Rightarrow (\div \text{ by } +1) \quad \frac{-1}{+1} < \frac{6}{+1}$

$= 1 < +6$

Still true
1 is less than 6

To divide or multiply by a negative you have to switch direction of the sign because the truth switches sides

ex $-1 < 6$ (x by -1)

$-1 \times -1 \Leftarrow 6 \times -1 \Rightarrow 1 < -6$,

not true!

but if I flip the sign ....

$1 > -6$

it is true

ex 2 $-1 < 6$ ($\div -1$)

$\frac{-1}{-1} < \frac{6}{-1} \Rightarrow 1 < -6$ not true so flip sign

$1 > -6$

Do 292 # 3ace, 9, 10, 12, 13

and 298 # 4, 7, 8, 9

and 305 # 4, 5, 9, 12, 16a, d,