Unit 6: Linear Equations   Name: _____

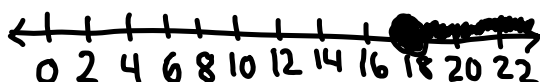$<$ less than $\leq$ less than or equal to   6.3 Introduction to Linear Inequalities-Notes $>$ greater than $\geq$ greater than or equal to

<u>Example (1):</u> Define a variable and write an inequality to describe each situation. Graph each situation.
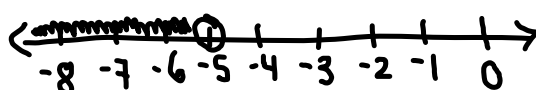
① Circle the number.

② Shade the point if it is included (greater than or equal to... less than or equal to).

③ Shade the correct part of the number line.

a)   Contest entrants must be at least 18 years old.

$x =$ age of contest entrants

$x \geq 18$

0 2 4 6 8 10 12 14 16 18 20 22

b)   The temperature has been below $-5°C$ for last week.

$t =$ the temperature

$t < -5$

<u>Note:</u> We did not shade the point because -5 is not included.

-8 -7 -6 -5 -4 -3 -2 -1 0

c)   You must have 7 items or less to use the express checkout line at the grocery store.

$g = \#$ of items allowed at express checkout.

$g \leq 7$
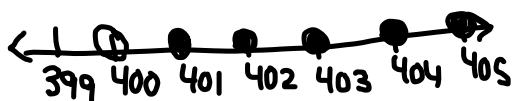
0 1 2 3 4 5 6 7 8
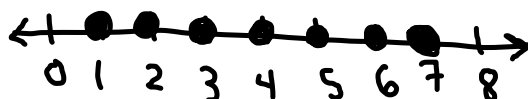
<u>Note:</u> The data is discrete so we only shade the points NOT the entire line.

d)   Scientists have identified over 400 species of dinosaurs.
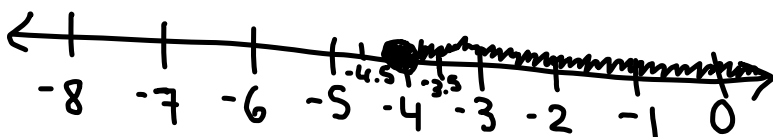
$d = \#$ of dinosaur species

$d > 400$

399 400 401 402 403 404 405

Example (2): Is each number a solution of the inequality $b \geq -4$? Justify the answer.

a) -8	b) -3.5	c) -4	d) -4.5	e) 0
Is -8 greater than or equal to -4? No!	Yes	Yes	No	Yes

$$b \geq -4$$

Example (3): Graph each inequality on a number line.
Write 4 numbers that are solutions of the inequality.

a) $t > -5$ b) $-2 \geq x$ c) $0.5 \leq a$ d) $p < -\frac{25}{3}$

$x \leq -2$ $a \geq 0.5$

a)

$-4, -3, -2, -1$

b)

$-4, -5, -6, -7$

c)

$1, 1.5, 2, 5$

d)

$-\frac{27}{3}, -\frac{28}{3}, -\frac{29}{3}, -\frac{30}{3}$