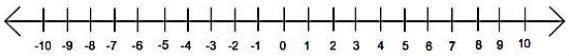
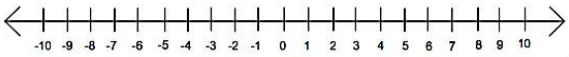
7A.4 **NOTES** Name:_____

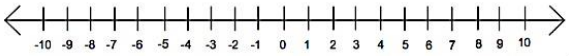
Compound Inequalities

Pairs of inequalities connected by *and* or *or* form **compound inequalities**. Solutions of compound inequalities can be graphed on a number line.

Graph the solution of $x > -1$ and $x \leq 3$ on one number line.

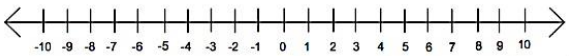
$x > -1$ 

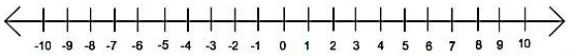
$x \leq 3$ 

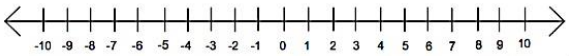
$x > -1$ and $x \leq 3$ 

To satisfy a compound equality connected by *and*, the solution must satisfy both inequalities. The solution for this type of compound inequality is the intersection, $\cap$ of the two solution sets.

Graph the solution of $x < -1$ or $x \geq 1$ on one number line.

$x < -1$ 

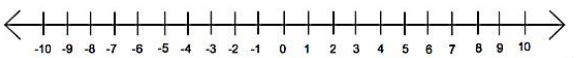
$x \geq 1$ 

$x < -1$ or $x \geq 1$ 

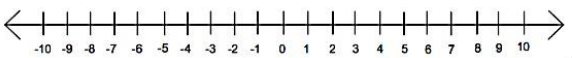
To satisfy a compound equality connected by *or*, the solution must satisfy at least one of the inequalities. The solution for this type of compound inequality is the union, $\cup$ of the two solution sets.

Graph the compound inequalities below.

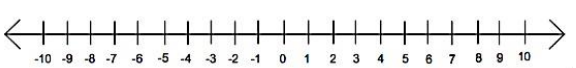
$x > 0$ and $x \leq 4$



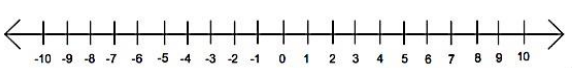
$x \leq -3$ or $x \geq 3$



$x < -2$ or $x > 0$



$x > 1$ and $x < 3$



Who Discovered the World's Smallest Glacier?

Use the table below to specify each union or intersection. Then find the corresponding graph in the column of graphs. Write the letter of the graph in each box that contains the number of the exercise.

$A = \{x \mid x > -3\}$

$B = \{x \mid x < 2\}$

$C = \{x \mid x \geq 0\}$

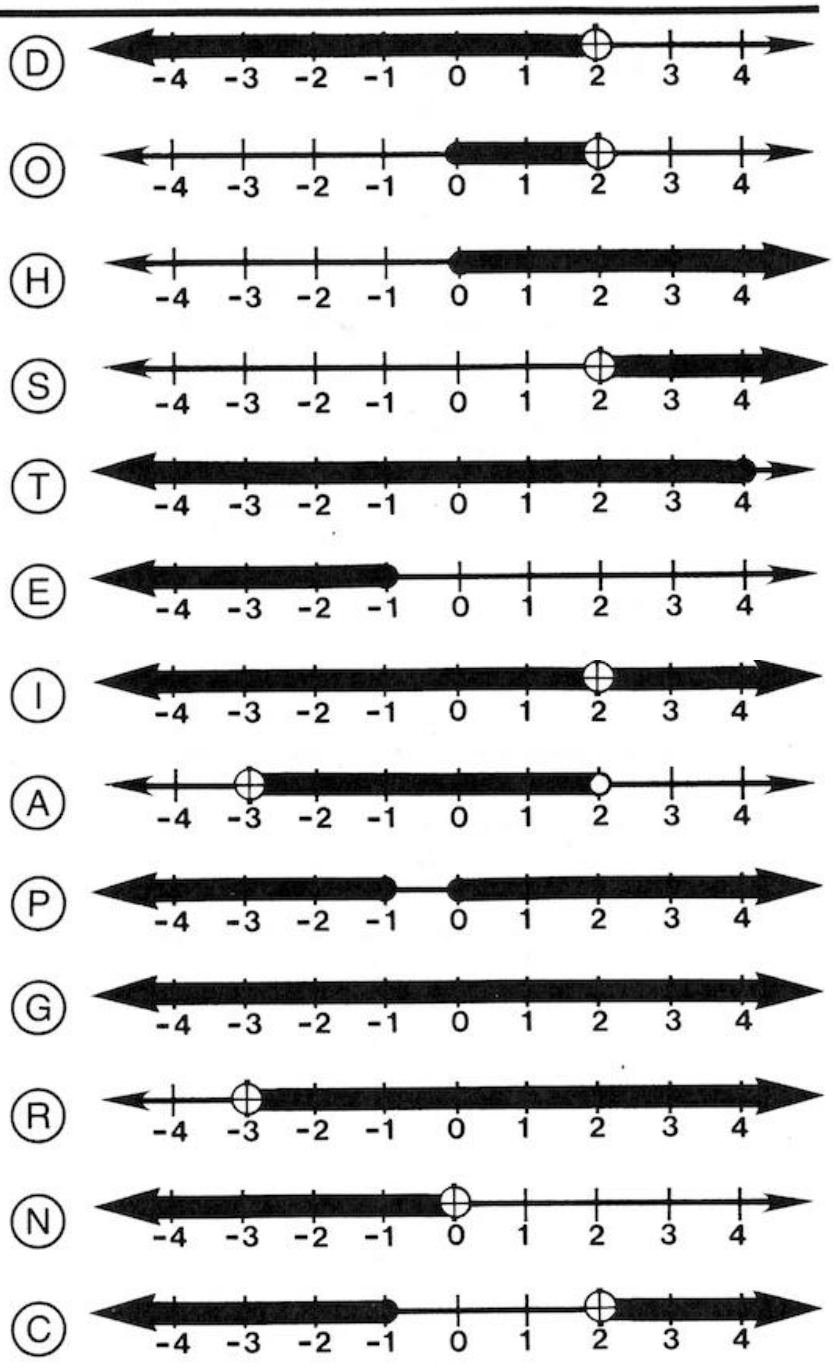
$D = \{x \mid x \leq -1\}$

$E = \{x \mid x \leq 4\}$

$F = \{x \mid x > 2\}$

$G = \{x \mid x < 0\}$

(1) $A \cap C$
(2) $A \cup C$
(3) $B \cap D$
(4) $B \cup D$
(5) $A \cap B$
(6) $A \cup B$
(7) $E \cap G$
(8) $E \cup G$
(9) $C \cap D$
(10) $C \cup D$
(11) $B \cap C$
(12) $D \cup F$
(13) $A \cap F$
(14) $B \cup F$



5	10	3	2	13	11	7	9	14	8	1	6	11	11	4	14	12	3	13	14	6	1	8