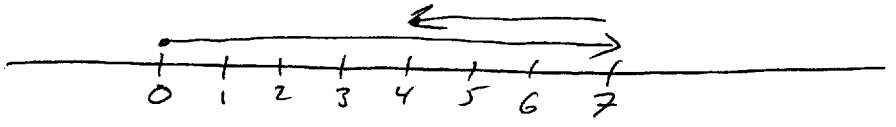
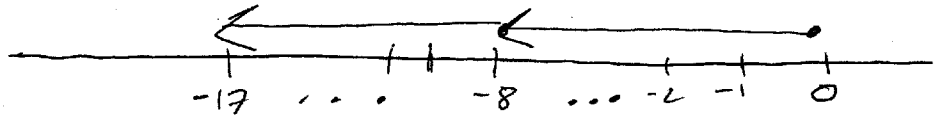
(1) (a) (i) $7+(-3)=4$



(3) $-8+(-9)=-17$



(3) (a) FALSE: -1 is not a whole Number

(b) TRUE: if $a<0$ and $b<0$ then $a+b<0$

(c) FALSE: $-1+3=2$ and 2 isn't negative

(d) FALSE: Same as (c) $3+(-1)=2$

(e) TRUE: For example, we could add $(-2)+(-5)$ as follows: $2+5=7$ so $(-2)+(-5)=-7$.

(4) (i) indicates subtraction

(ii) indicates the additive inverse or negative

(iii) indicates the opposite

(5) (b) $343+(-44)=299$: Mary received a \$343 Christmas bonus and then bought \$44 worth of groceries. How much money remained?

(d) $(-35)+(-189)=-224$: Bob paid \$35 to fill up his car with gas and then paid \$189 for new tires. How much did he spend at the gas station?

(6) (a) $|0| = 0$, $|13-8| = |5| = 5$, $|8-13| = |-5| = 5$

(b) $-a$ is positive when a is negative (for example, $-(-2) = 2 > 0$). However, $-|a|$ is never positive because $|a|$ is always ≥ 0 and so $-|a| \leq 0$ for all a.

(c) The student is wrong because $|a| = -a$ for 0 and <u>all</u> negative numbers. For example, $|-3| = 3$ and $-(-3) = 3$. The student made this mistake because he/she believes $-a$ must be negative.

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(4) (a) ab is negative

(b) $-ab$ is positive

(c) $-a^2b^2$ is negative (because <u>both</u> a^2, b^2 are pos.)

(d) $(ab)^2$ is positive (because the square of any nonzero number is positive)

(e) $-a \div b$ is positive (since $a \div b$ is negative)

(f) $-|a-b|$ is negative (since $a > 0$ and $b < 0$, $a \neq b$ and so $|a-b| \neq 0$. Thus $|a-b| > 0$ and so $-|a-b| < 0$)

(g) b^n must be <u>positive</u> when n is even, since a negative no. multiplied by itself an even number of times must be positive

(h) b^n must be <u>negative</u> when n is odd, since a negative no. multiplied by itself an odd number of times must be negative.