Complete solutions to Intro(a)

1. (a) 17 lies to the right of -17 so $17 > -17$.
(b) Reverse of (a) so $-17 < 17$.
(c) -2 is to the left of -1, so $-2 < -1$.
(d) -5 is equal to -5, hence $-5 \le -5$ or $-5 \ge -5$.
(e) Clearly -2 is less than 0, so $-2 < 0$.

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2. (a) $3 + 2 = 5$
(b) It has to be the negative symbol because - (-) makes a + and $3 + 2 = 5$.
(c) $9 \div 3 = 3$
(d) How can we make 77 out of -7 and -11?
By multiplication, also minus times minus gives plus. Thus $-7 \times (-11) = 77$.
(e) -6 add 5 gives -1. This can only be achieved by placing a subtraction sign between the two numbers because $-(-5)$ gives $+5$. Therefore

$$-6 - (-5) = -6 + 5 = -1$$

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3. (a) $7 - 12 = -5$
(b) $-3 + 1 = -2$
(c) We have to apply Rule (2) from the text:

$$-3 - (-1) = -3 + 1 = -2$$

(d) Applying Rule (1) gives :

$$-11 + (-11) = -11 - 11 = -22$$

(Remember we take another 11 steps to the left from -11).
(e) Using Rule (2):

$$-11 - (-11) = -11 + 11 = 0$$

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4. If both numbers have the same polarity then we result in a positive number, otherwise we have a negative number.
(a) $(-6) \div (-2) = 3$ (b) $(-6) \times 2 = -12$ (c) $(-6) \times (-2) = 12$
(d) $(-6) \div 2 = -3$ (e) $(-6) \div (-2) = 3$ (f) $6 \div (-2) = -3$
(g) There are an odd number of negatives, so $(-1) \times (-2) \times (-8) = -16$.

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5. Use [(-)] or [+/-] button on your calculator.
(a) $(-343) \times (343) = -117649$
(b) $(-343) \times (-343) = 117649$ (both numbers have the same polarity).
(c) $(-729) \div 81 = -9$
(d) Same as (c) only the question is written differently:

$$\frac{(-729)}{81} = (-729) \div 81 = -9$$

Might also be written as $-\dfrac{729}{81}$.
(e) Applying Rule (2) gives:

$$(-666) - (-1945) = -666 + 1945 = 1279$$

(f) There are an even number of negatives, so

$$\underbrace{(-2) \times (-5)}_{=10} \times \underbrace{(-7) \times (-10)}_{=70} = 10 \times 70 = 700$$