

1. What integer is represented in the "charge in the jar" model.? _____

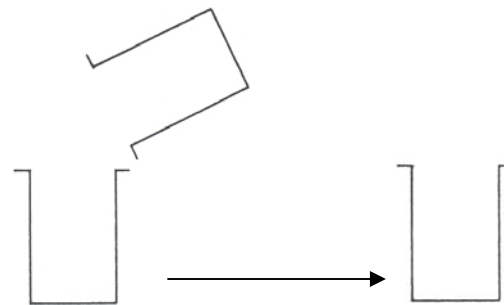
2. Represent the integer -5 in **three** different ways using the "charge in the jar" model.



3. Using mixed charges in each jar, show the addition problem $3 + (-7)$.

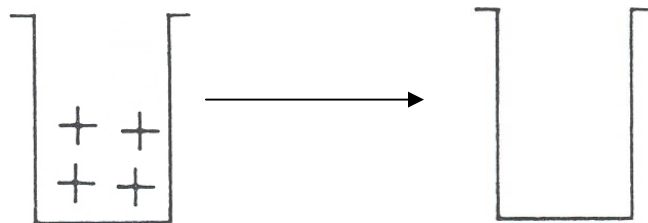
The sum is the integer _____

(Write the result under the final jar.)



4. In the subtraction problem $4 - (-7)$, which integer is the minuend? _____ the subtrahend? _____

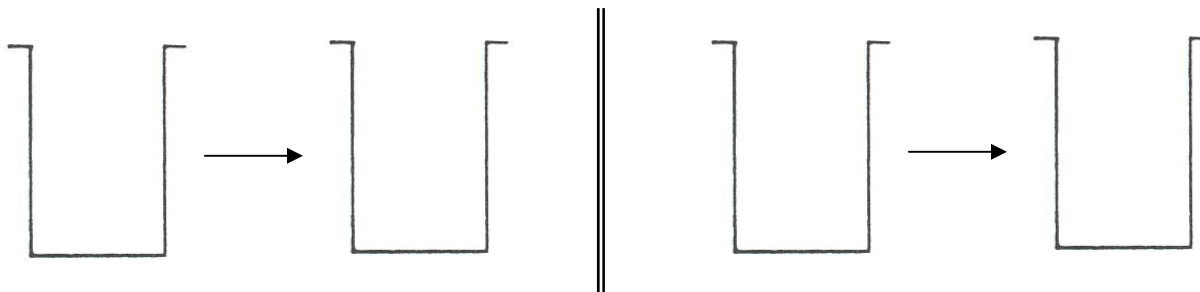
5. A student represents the integer 4 with the following charge model below. Modify this jar appropriately to represent the subtraction problem $4 - (-7)$ as shown in the article.



The result is the integer _____. (Write the result under the final jar.)

6. Complete the blanks: When we represent the multiplication problem such as $4 \times (-2)$, the article recommends that we view this as adding two negative charges to an empty jar a total of four times. This is formally interpreting multiplication as _____.

If the first factor of the multiplication problem is negative, such as in $(-2) \times 3$, the multiplication problem is interpreted as _____. Show each problem below.



7. Using good English and complete sentences, explain the multiplication problem $(-2) \times (-3)$ using the charge in the jar model as discussed in the article, illustrating with appropriate sketches.
8. In the article, when the dividend and the divisor have the *same* sign, as in $(24) \div (6) = ?$, the division problem is thought of as $(?) \times (6) = 24$.
Similarly the division problem $(-24) \div (-6) = ?$ is thought of as $(?) \times (-6) = -24$.
This is the _____ model of division. Hint: Read your *Handbook*, Section 3.11.
9. If the dividend and the divisor have the *opposite* signs, such as $(-24) \div (+6)$ in Figure 13, we have to repeatedly subtract $+6$ from a zero charged jar and count how many groups of $+6$ we will take away, so the sign of the result is _____.
{negative, positive}
- Similarly $(+24) \div (-6)$ in Figure 14 is viewed as counting how many groups of -6 we will take away, so the sign of the result is _____.
{negative, positive}
- More simply, if we view division as the inverse operation of multiplication, we can tell the number “?” is negative if $(?) \times (6) = -24$ or $(?) \times (-6) = 24$.
10. Give two advantages of the charge model for operations on integers.