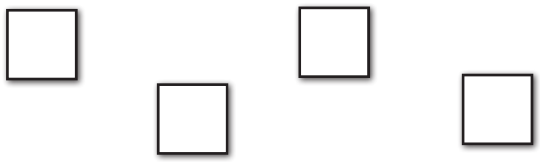
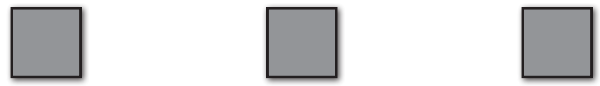
## ACTIVITY 1.1 Integer Pieces and the Zero Principle

Name:

*To represent integer values, use the small yellow and red square tiles.*

| | |
|---|---|
|  **Each yellow square represents +1.** |  **Each red square represents –1.** |

Use the small square tiles to represent each number. Make a sketch of your model.

| | |
|---|---|
| 1. 6 | 2. –4 |
| 3. A single digit odd number | 4. An even prime number |
| 5. 10 feet below sea level | 6. 5 degrees below zero |

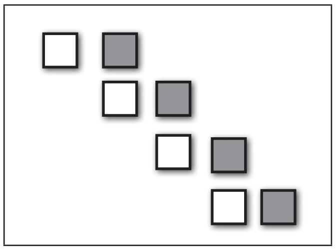
*The numbers* +1 and –1 *are called* ***opposites****. They sum to* 0. *That is* 1 + (–1) = 0. *We refer to* 1 *and* –1 *as a* ***zero pair****. In an elevator, for example, if you go up one floor* (+1) *and then down one floor* (–1), *you are back to where you started.*

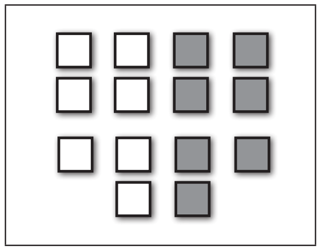
*When we add positive and negative integers, we often use what is called the* ***Zero Principle*** *to perform the addition operation.*

The mats below show two basic examples of the *Zero Principle*. We make pairs of yellow and red tiles.

| | |
|---|---|
|  **1 + (–1) = 0** |  **2 + (–2) = 0** |

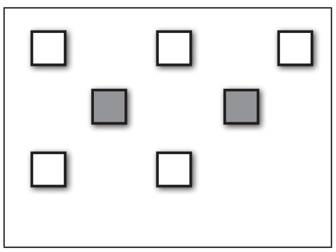
7. Write an equation for each diagram.

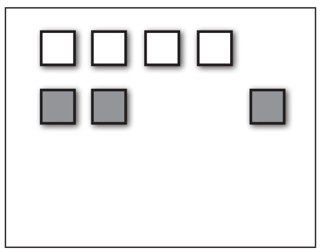




*We can use the Zero Principle when we model addition of integers with the tiles. We make zero pairs when possible, and then determine the final sum.*

*The integer 3 is modeled in each diagram below.*

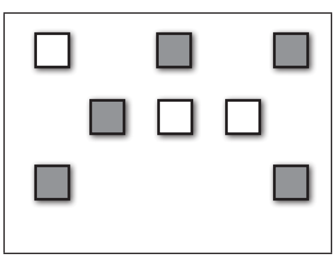


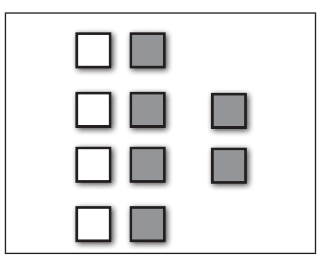


If the two zero pairs are removed, three yellow tiles remain, or positive 3.

We could write an equation:
5 + (–2) = 3 or (–2) + 5 = 3.

The integer –2 is modeled in the diagrams below.

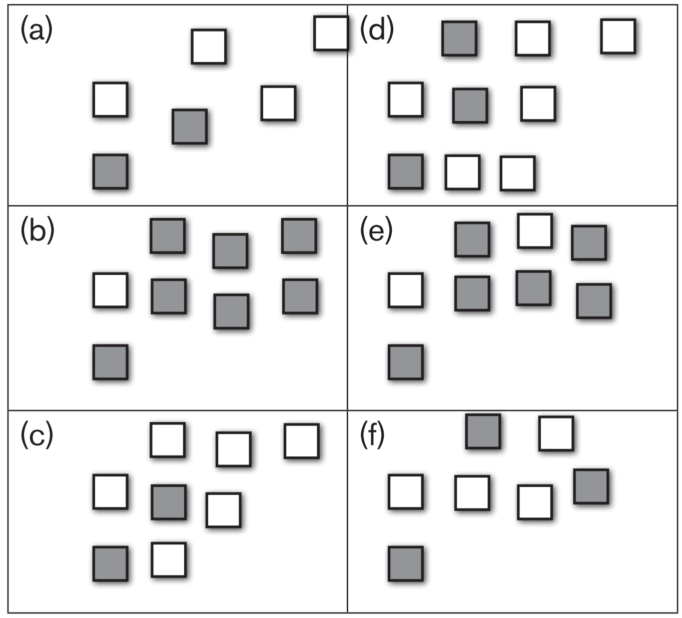




If the three zero pairs are removed, two red tiles remain, or negative 2.

We could write an equation:
(–5) + 3 = –2 or 3 + (–5) = –2

8. Name the integer modeled in each of the following diagrams. Write an equation for each.




9. Create a model for each integer using yellow and red tiles. Write an equation for each.

| | |
|---|---|
| (a) 4 | (d) 5 |
| (b) –3 | (e) –6 |
| (c) –1 | (f) 2 |

10. How many different models are there for the integer 4? Explain.

11. How many different models are there for the integer –3? Explain.