

Unit 2 Lesson 2: Writing Equations to Model Relationships (Part 1)

1 Math Talk: Percent of 200 (Warm up)

Student Task Statement

Evaluate mentally.

25% of 200

12% of 200

8% of 200

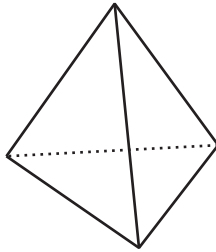
$p\%$ of 200

2 A Platonic Relationship

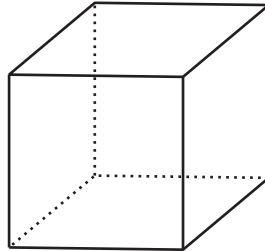
Student Task Statement

These three figures are called Platonic solids.

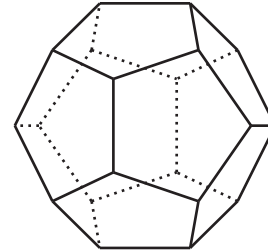
Tetrahedron



Cube



Dodecahedron



The table shows the number of vertices, edges, and faces for the tetrahedron and dodecahedron.

	faces	vertices	edges
tetrahedron	4	4	6
cube			
dodecahedron	12	20	30

1. Complete the missing values for the cube. Then, make at least two observations about the number of faces, edges, and vertices in a Platonic solid.
2. There are some interesting relationships between the number of faces (F), edges (E), and vertices (V) in all Platonic solids. For example, the number of edges is always greater than the number of faces, or $E > F$. Another example: The number of edges is always less than the sum of the number of faces and the number of vertices, or $E < F + V$.

There is a relationship that can be expressed with an equation. Can you find it? If so, write an equation to represent it.

3 Blueberries and Earnings

Student Task Statement

1. Write an equation to represent each situation.
 - a. Blueberries are \$4.99 a pound. Diego buys b pounds of blueberries and pays \$14.95.
 - b. Blueberries are \$4.99 a pound. Jada buys p pounds of blueberries and pays c dollars.
 - c. Blueberries are d dollars a pound. Lin buys q pounds of blueberries and pays t dollars.
 - d. Noah earned n dollars over the summer. Mai earned \$275, which is \$45 more than Noah did.
 - e. Noah earned v dollars over the summer. Mai earned m dollars, which is 45 dollars more than Noah did.
 - f. Noah earned w dollars over the summer. Mai earned x dollars, which is y dollars more than Noah did.
2. How are the equations you wrote for the blueberry purchases like the equations you wrote for Mai and Noah's summer earnings? How are they different?

4 Car Prices

Student Task Statement

The tax on the sale of a car in Michigan is 6%. At a dealership in Ann Arbor, a car purchase also involves \$120 in miscellaneous charges.

1. There are several quantities in this situation: the original car price, sales tax, miscellaneous charges, and total price. Write an equation to describe the relationship between all the quantities when:
 - a. The original car price is \$9,500.
 - b. The original car price is \$14,699.
 - c. The total price is \$22,480.
 - d. The original price is p .
2. How would each equation you wrote change if the tax on car sales is $r\%$ and the miscellaneous charges are m dollars?