

5. Cuisenaire® Rods can be used to model number problems. If you worked the problem $\frac{1}{2} \times 1\frac{1}{4}$ and said that the answer to the problem was a yellow rod,

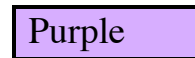
a) what color rod represents the number $1\frac{1}{4}$

b) what color rod represents the number 1

 White

 Red

 Green

 Purple

 Yellow

 Dark Green

 Black

 Brown

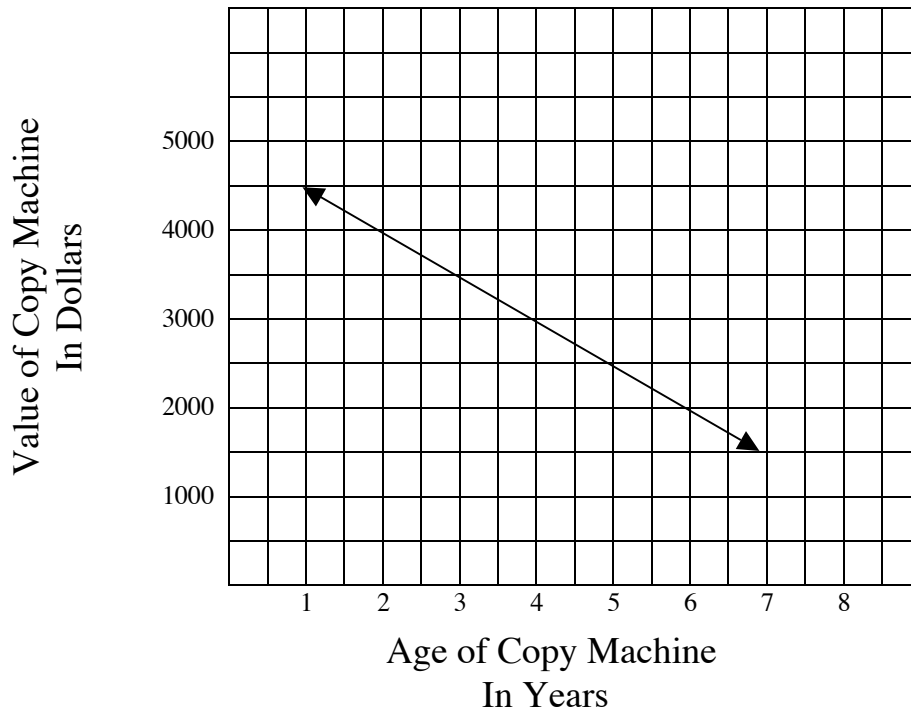
 Blue

 Orange

6. a. List the first five terms in the sequence whose general term is $n^2 - 1$.

b. On the first day of a new exercise program, Mary ran 1 mile. Every day she plans to run $\frac{1}{3}$ mile more than the day before until she is running 10 miles a day. If Mary started her new exercise program on May 5, 2003, on what date will she first run 10 miles? Show your work.

7. Consider the graph below.



- What is the value of the machine when it is two years old?
- What is the slope of the line?
- Predict when the value of the copy machine will be zero.

8. A group of students are comparing the classes that they are taking. There are 35 students studying American history, 20 students studying chemistry, and 15 students studying statistics. 4 study all three subjects, while 20 students study only American history, 13 students study American history and chemistry, and 5 study only statistics and chemistry. How many students are in the group? Show your work.

9. Are the following true or false? For each statement, either give an example to illustrate why you believe a statement is true or give a counterexample to prove that a statement is false.

a) The sum of any three consecutive integers is divisible by 3

b) $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$

c) $\frac{1}{\frac{1}{a} + \frac{1}{b}} = \frac{ab}{a+b}$

d) Subtraction is commutative on the set of integers

e) If $4 \mid a^2$, then $4 \mid a$

f) The set $\{-1, 0, 1\}$ is closed under addition

10. a. A car was to be sold at a 12% discount. If the discount was \$2700, for how much would the car sell after the discount? Show your work.

b. A dress is put on sale. If the discount is \$11 and the sale price is \$66.75, what is the percent of discount? Round your answer to the nearest hundredth of a percent. Show your work.

Abbreviated Solutions

1. $\square 1.\bar{7}$ $-\sqrt{3}$ -1.7 $(1/5)^{70}$ $1/20$
2. The ratio of boys to girls will become greater. (Partial credit if it is assumed that there are only 3 boys and 8 girls)
3. $5/12$ (Split them all into twelfths)
4. a. 20
b. 122_{six}
5. a. Orange
b. Brown
6. a. If you begin with $n = 0$, then the answer is $-1, 0, 3, 8, 15$
If you begin with $n = 1$, then the answer is $0, 3, 8, 15, 24$
b. June 1, 2003 (Note: May has 31 days)
7. a. \$4000
b. $-\$500/\text{yr}$ (No credit if the answer is $-1/2$)
c. In about 10 yrs
8. 46 students – (Use a venn diagram)
9. a. True
b. False
c. True
d. False
e. False
f. False
10. a. \$19,800
b. 14.15%