Chapter 6 Gifted and Enrichment Answers

1. To divide a quantity by 2, you either break the quantity into 2 equal groups or break the quantity into groups of 2. For example, to divide 16 by 2, you divide 16 into 2 groups, resulting in 8 per group; or you make groups of 2, resulting in 8 groups.

To divide 16 by a fraction such as $\frac{1}{2}$, use the second approach. You make groups of $\frac{1}{2}$, resulting in 32 groups. If you multiply 16 by 2, the reciprocal of $\frac{1}{2}$, you also get 32.

2. a) $\frac{1}{5}$ of $\frac{10}{12}$ of an amount

$= \frac{1}{6}$ of an amount

b) Example: Three-fourths of the result of five-ninths of an original amount is the same as multiplying the original amount by $\frac{5}{12}$ $\left(\text{because } \frac{3}{4} \times \frac{5}{9} = \frac{5}{12}\right)$.

3. a) Asian: $\frac{1}{4} \times 1140 = 285$

First Nations: $\frac{2}{5} \times 1140 = 456$

European: $\frac{1}{3} \times 1140 = 380$

b) mean $= \left(\frac{1}{4} + \frac{2}{5} + \frac{1}{3}\right) \div 3$

$= \left(\frac{15 + 24 + 20}{60}\right) \times \frac{1}{3}$

$= \frac{59}{60} \times \frac{1}{3}$

$= \frac{59}{180}$, which is almost $\frac{1}{3}$

c) other cultures:

$285 + 456 + 380 = 1121$

so $1140 - 1121 = 19$ other

$\frac{19}{1140} = \frac{1}{60}$

Chinese: $\frac{5}{6} \times \frac{1}{4} = \frac{5}{24}$

other Asian: if $\frac{5}{6}$ are Chinese, then $\frac{1}{6}$ are other Asian, $\frac{1}{6} \times \frac{1}{4} = \frac{1}{24}$

d) The three given fractions, Asian cultures, First Nations cultures, and European cultures, and the fraction for other cultures found in part c) add to 1 because they represent the whole.

Check: $\frac{1}{4} + \frac{2}{5} + \frac{1}{3} + \frac{1}{60}$

$= \frac{15 + 24 + 30 + 1}{60}$

$= \frac{60}{60}$ or 1

4. Let s be the height after the second bounce.

$17\frac{7}{9} = \frac{2}{3}$ of s

$\frac{160}{9} = \frac{2}{3} \times s$

$\frac{160}{9} \times \frac{3}{2} = s$

$\frac{80}{3} = s$

Let f be the height after the first bounce.

$\frac{80}{3} = \frac{2}{3}$ of f

$40 = f$

Let h be the height from which the ball was originally released.

$40 = \frac{2}{3}$ of h

$60 = h$

The ball was originally released from a height of 60 cm.

5. The first term is 1 and the second term is $\frac{3}{5}$. The third term is found by dividing the first term by the second term. So, each successive term is found by dividing the previous term into the term previous to it.

6th term = 4th term ÷ 5th term

$= \frac{9}{25} \div 4\frac{17}{27}$

$= \frac{243}{3125}$

7th term = 5th term ÷ 6th term

$= \frac{125}{27} \div \frac{243}{3125}$

$= 47\frac{1258}{6561}$