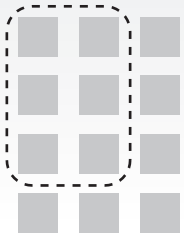
INVESTIGATING FRACTIONS OF SETS

TASK 1

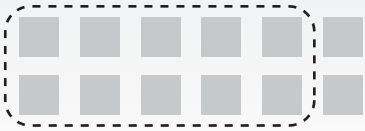
Torin bought a bag of 12 candies to share with his sister Shannon. He is trying to decide whether to keep either three fourths ($\frac{3}{4}$) of the candies or five sixths (6–5) of them.

To help decide how many to give to Shannon, Torin tries arranging the candies into different arrays.

Array 1



Array 2



1 Draw a ring around the candies that show $\frac{3}{4}$ of 12 in the Array 1 and a ring around the candies that show $\frac{5}{6}$ of 12 in Array 2.

2 Complete each number sentence.

$\frac{3}{4}$ of 12 = 9 $\frac{5}{6}$ of 12 = 10

3 How many candies do you think Torin will give Shannon? Explain your thinking.

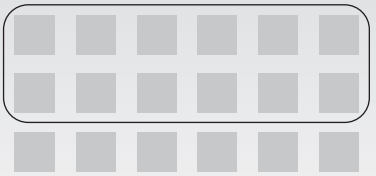
Choosing to keep $\frac{3}{4}$ of 12 = 9.

If he keeps $\frac{5}{6}$ of 12 = 10, he will give Shannon 2 candies.

It depends on how greedy Torin is whether he gives Shannon 3 or 2 candies, but now he knows how many he needs to give in either case.

TASK 6

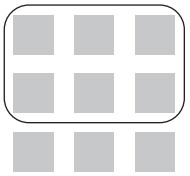
Torin draws the following diagram showing 18 candies altogether and a ring around of $\frac{2}{3}$ the 18 candies.



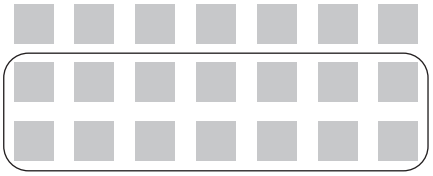
He then writes $\frac{2}{3}$ of 18 = 12, explaining that 12 of the 18 candies represents two thirds ($\frac{2}{3}$) of all of the candies. So he writes $\frac{12}{18} = \frac{2}{3}$.

The fractions $\frac{12}{18}$ and $\frac{2}{3}$ are called *equivalent* fractions.

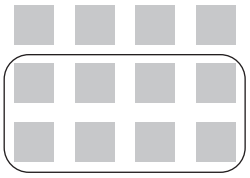
19 Each diagram below shows a fraction that is equivalent to $\frac{2}{3}$. Write the fractions in the frames under each diagram.



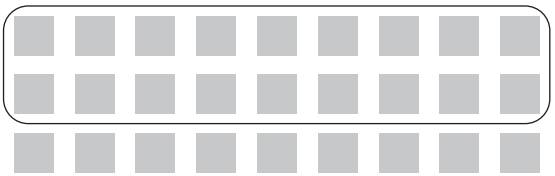
$\frac{6}{9} = 2/3$



$\frac{14}{21} = 2/3$



$\frac{10}{15} = 2/3$



$\frac{18}{27} = 2/3$

20 Write numbers in the frames to form fractions that are all equivalent to $\frac{2}{3}$.

$$\frac{2}{3} = \frac{14}{21} = \frac{10}{15} = \frac{20}{30} = \frac{48}{72} = \frac{24}{36} = \frac{34}{51} = \frac{64}{96} = \frac{54}{81}$$

Shannon and Torin use different methods to find fractions of whole number and decimal values.

Shannon's Method

Divide the denominator of the fraction into the whole number (or decimal value), then multiply by the numerator.

Torin's Method

Multiply the numerator of the fraction by the whole number or decimal value, then divide by the denominator to get the correct answer.

Can you figure out why Shannon's method works better for exercises in column A and Torin's method works better for column B? Calculate all the following exercises using either method.

a

Exercises	Answers
$\frac{2}{5}$ of 60	24
$\frac{3}{8}$ of 63	27
$\frac{3}{6}$ of 72	27
$\frac{5}{6}$ of 42	35
$\frac{5}{12}$ of 360	150
$\frac{4}{13}$ of 65	20

b

Exercises	Answers
$\frac{5}{7}$ of 37	$26\frac{3}{7}$
$\frac{2}{9}$ of 85	$18\frac{8}{9}$
$\frac{7}{12}$ of 100	$58\frac{1}{3}$
$\frac{5}{11}$ of \$47	\$21.36
$\frac{1}{100}$ of \$35	\$0.35
$\frac{7}{8}$ of \$25.45	\$22.27