

0.001

$$\frac{1}{100}$$

1.01%

0.049

$$\frac{1}{20}$$

5.5%

9.5%

$$\frac{1}{10}$$

0.12

0.195

$$\frac{1}{5}$$

21%

24.5%

$$\frac{1}{4}$$

0.26

0.2999

$$\frac{3}{10}$$

31.5%

32%

$$\frac{1}{3}$$

0.34

0.3902

$$\frac{1}{5}$$

40.5%

49.5%

$$\frac{1}{2}$$

0.51

0.57

$$\frac{3}{5}$$

61%

66%

$$\frac{2}{3}$$

0.67

0.69

$$\frac{7}{10}$$

72.1%

72.2%

$$\frac{3}{4}$$

0.7624

0.79

$$\frac{4}{5}$$

85%

87%

$$\frac{9}{10}$$

0.9624

0.97

1

103%

Mathematical Message

Place the numbers below in numerical order. If you wish, you may change the numbers to decimal form for easy comparison. When the numbers are in order, the code letters will spell out a message.

Number List	Code Letter	Decimal Form	Numerical Order	Message
$\frac{1}{5}$	M	_____	_____	_____
0.6	E	_____	_____	_____
$\frac{9}{11}$	I	_____	_____	_____
$\frac{5}{4}$	A	_____	_____	_____
$\frac{10}{6}$	N	_____	_____	_____
$\frac{9}{4}$	N	_____	_____	_____
$\frac{4}{3}$	T	_____	_____	_____
$\frac{1}{10}$	C	_____	_____	_____
$\frac{3}{4}$	space	_____	_____	_____
$\frac{1}{20}$	E	_____	_____	_____
1.0	space	_____	_____	_____
1.75	A	_____	_____	_____
$\frac{6}{5}$	R	_____	_____	_____
2.0	T	_____	_____	_____
$\frac{15}{6}$	N	_____	_____	_____
$\frac{42}{20}$	H	_____	_____	_____
0.9	H	_____	_____	_____
$\frac{3}{10}$	L	_____	_____	_____
$\frac{2}{3}$	L	_____	_____	_____
$\frac{8}{9}$	T	_____	_____	_____
0.4	space	_____	_____	_____
$\frac{1}{100}$	D	_____	_____	_____
$\frac{4}{5}$	W	_____	_____	_____
1.4	I	_____	_____	_____
$\frac{9}{5}$	L	_____	_____	_____
$\frac{8}{3}$	G	_____	_____	_____
$\frac{1}{2}$	H	_____	_____	_____
0.7	P	_____	_____	_____
$\frac{3}{2}$	O	_____	_____	_____
$\frac{7}{3}$	K	_____	_____	_____
1.9	space	_____	_____	_____
$\frac{12}{5}$	I	_____	_____	_____
$\frac{1}{8}$	I	_____	_____	_____
2.2	I	_____	_____	_____
$\frac{1}{4}$	A	_____	_____	_____
$\frac{1}{3}$	S	_____	_____	_____
1.0	space	_____	_____	_____

Patterns for Repeating Decimals

I. Use your calculator to change each fraction below to a decimal form.

1. $\frac{1}{9}$ _____ 2. $\frac{2}{9}$ _____

3. $\frac{4}{9}$ _____ 4. $\frac{17}{99}$ _____

5. $\frac{25}{99}$ _____ 6. $\frac{32}{99}$ _____

7. $\frac{422}{999}$ _____ 8. $\frac{535}{999}$ _____

9. $\frac{683}{999}$ _____

Use the pattern you see to determine which fraction is equivalent to the decimals below. Check your answer with the calculator.

10. $.55\overline{5}$ _____ 11. $.7\overline{7}$ _____

12. $.83\overline{83}$ _____ 13. $.26\overline{26}$ _____

14. $.13\overline{7}$ _____ 15. $.18\overline{4}$ _____

16. How would you explain this pattern to someone else?

II. Examine the equivalent fractions and decimals below. Look for a pattern.

$0.23\overline{3} = \frac{21}{90}$

$0.41\overline{1} = \frac{37}{90}$

$0.57\overline{77} = \frac{52}{90}$

$0.8444\overline{4} = \frac{76}{90}$

$0.4121\overline{2} = \frac{408}{990}$

$0.7353\overline{5} = \frac{728}{990}$

$0.3919\overline{1} = \frac{388}{990}$

$0.5626\overline{2} = \frac{557}{990}$

17. Use the pattern to determine the ratio equivalent to:

$0.6222\overline{2} =$ _____

$0.371717\overline{1} \dots =$ _____

18. Can you determine a ratio equivalent to $0.431531\overline{5}$? _____

$$\frac{1}{12}$$

$$\frac{1}{2}$$

$$\frac{1}{10}$$

$$\frac{1}{3}$$

$$\frac{5}{8}$$

$$\frac{1}{4}$$

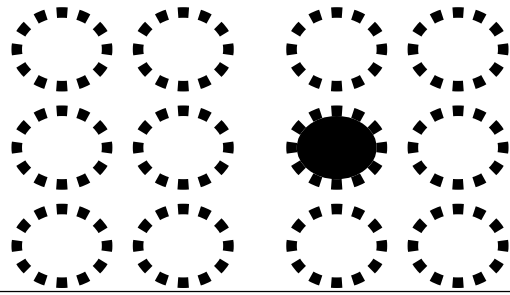
$$\frac{1}{8}$$

$$\frac{2}{3}$$

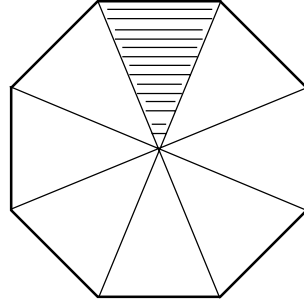
$$\frac{3}{4}$$

$$\frac{1}{5}$$

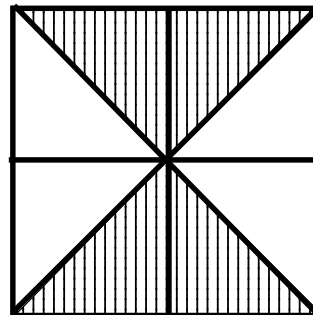
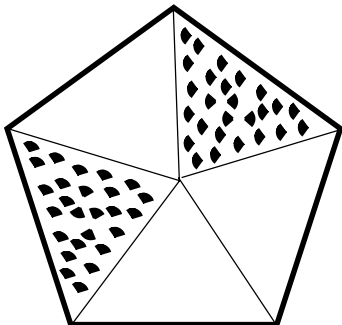
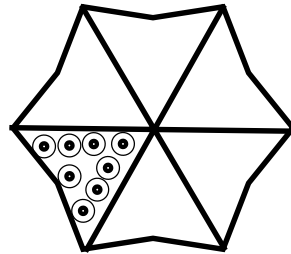
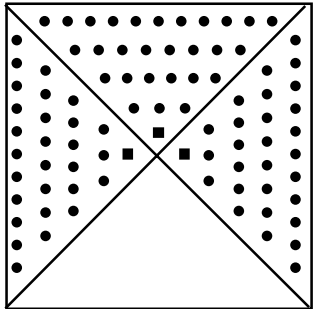
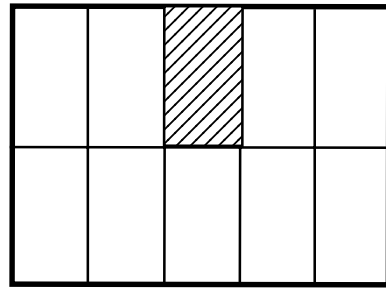
$$\frac{2}{5}$$

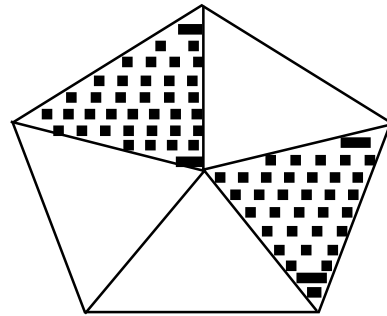
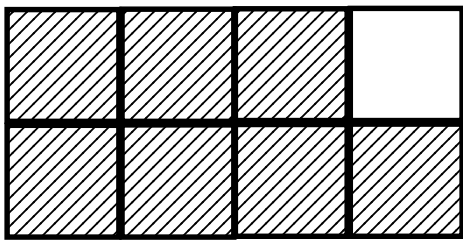
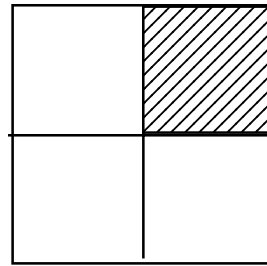
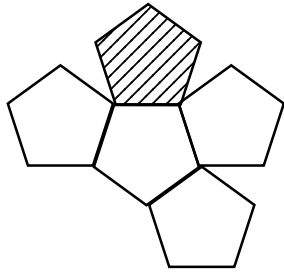
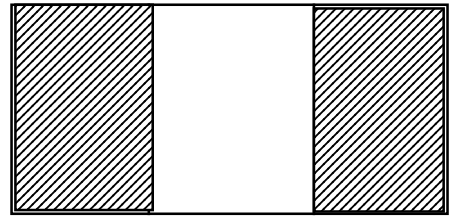
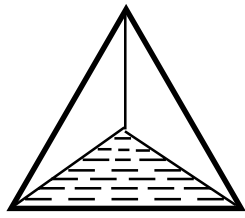


$$\frac{1}{6}$$



$$\frac{7}{8}$$





$$\frac{2}{16}$$

$$\frac{3}{24}$$

$$\frac{6}{8}$$

$$\frac{9}{12}$$

$$\frac{2}{8}$$

$$\frac{3}{12}$$

$$\frac{6}{12}$$

$$\frac{4}{6}$$

$$\frac{8}{12}$$

$$\frac{2}{6}$$

$$\frac{4}{12}$$

$$\frac{5}{10}$$

$$\frac{2}{10}$$

$$\frac{4}{20}$$

$$\frac{2}{24}$$

$$\frac{3}{36}$$

$$\frac{15}{24}$$

$$\frac{21}{24}$$

$$\frac{2}{12}$$

$$\frac{2}{20}$$

$$\frac{3}{30}$$

$$\frac{10}{16}$$

$$\frac{14}{16}$$

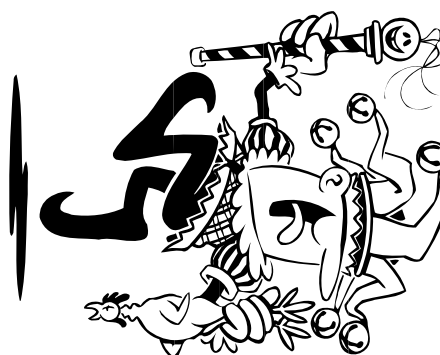
$$\frac{3}{18}$$

10 %

25 %

4 / 10

6 / 15



60 %

30 %

75 %

40 %

70 %

$33\frac{1}{3}\%$

80 %

33 %

.1 %

66 %

.10 %

$66\frac{2}{3}\%$

.40 %

.50 %

Understand the problem.

Is there enough information?

Read the problem again.

Draw a picture.

What do I know.

What am I looking for?

Read the problem again.



Devise a plan.

Have I ever seen a problem like this before?

Can I simplify the problem?

Is there a pattern?

Can I make a table? draw a picture? work backward?

What about guess and check?

make a list?

Can I write a number sentence?

Read the problem again.



Carry out the plan.

Remember what I'm looking for.

Is this plan taking me where I need to go?

Read the problem again.

Do I need a new plan?

Look back.

Did I answer the question?

Does my answer make sense?

Can I solve this problem any other way?

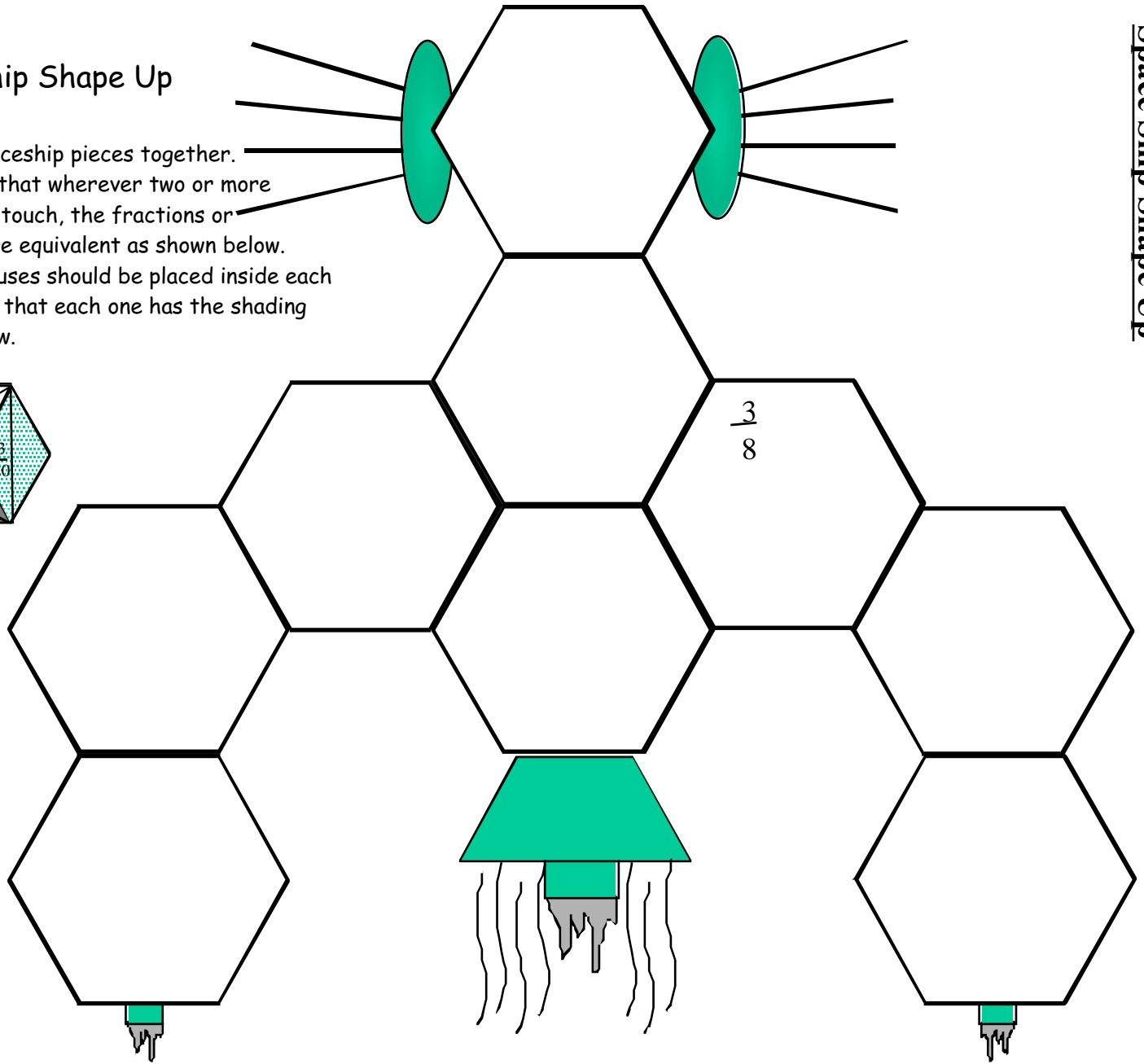
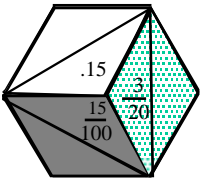
Read the problem again.

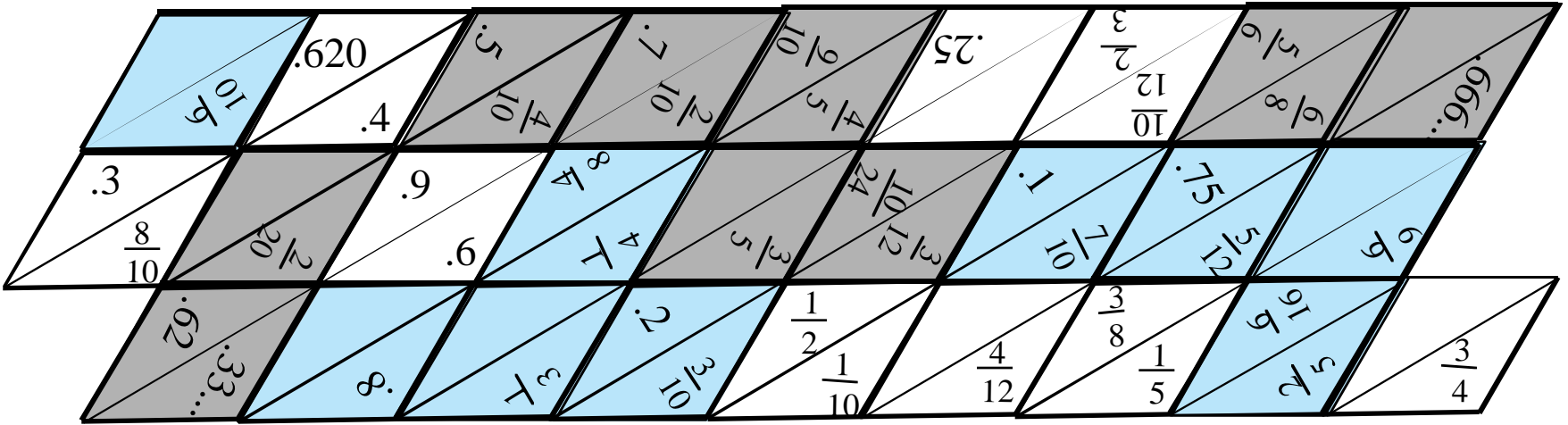


Space Ship Shape Up

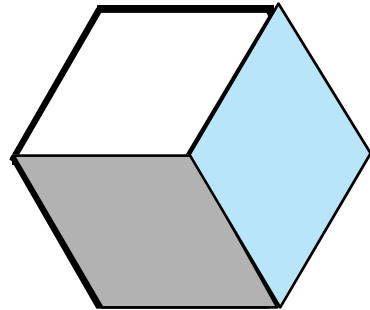
Spaceship Shape Up

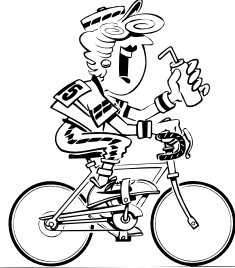
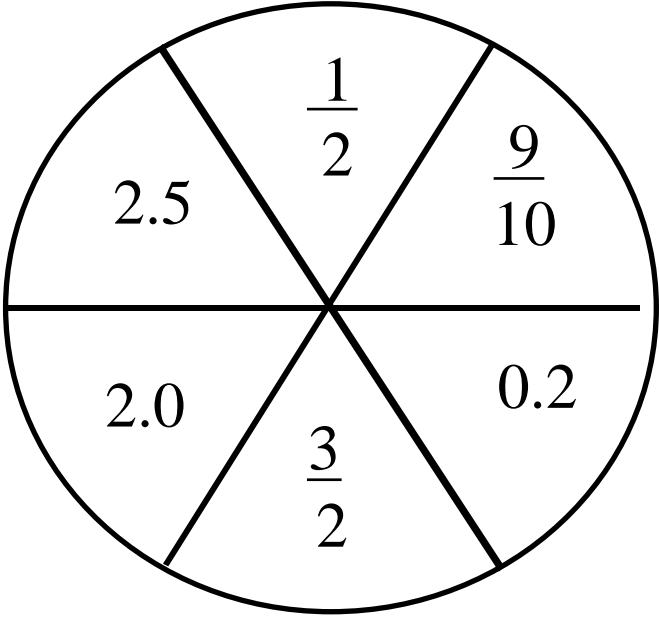
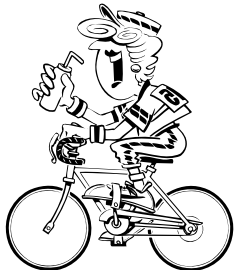
Put the spaceship pieces together.
 Make sure that wherever two or more rhombuses touch, the fractions or decimals are equivalent as shown below.
 The rhombuses should be placed inside each hexagon so that each one has the shading shown below.





Each completed hexagon should have the shading shown here. That is, white at the top, darker shade at the bottom, and medium shade at the right side.



				Finish	Start ↓
	<u>Rational Race</u>				
					
					
					

Rational Number Cards

0.01	$\frac{1}{20}$	$\frac{1}{10}$
$\frac{1}{8}$	$\frac{1}{5}$	$\frac{1}{4}$
0.3	$\frac{1}{3}$	$\frac{2}{5}$
0.5	$\frac{3}{5}$	$\frac{2}{3}$

Rational Number Cards

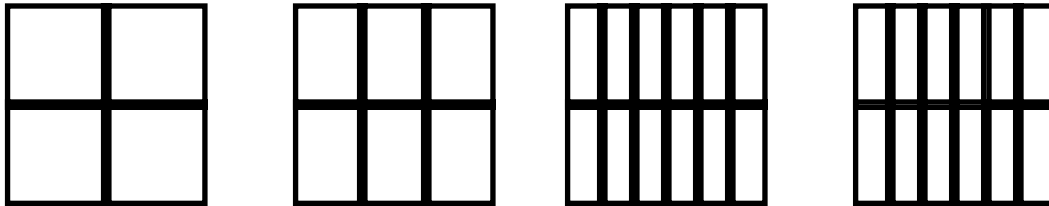
$\frac{7}{10}$	$\frac{3}{4}$	$\frac{4}{5}$
$\frac{9}{11}$	$\frac{8}{9}$	0.9
1.0	$\frac{6}{5}$	$\frac{5}{4}$
$\frac{4}{3}$	$\frac{7}{5}$	$\frac{3}{2}$

Rational Number Cards

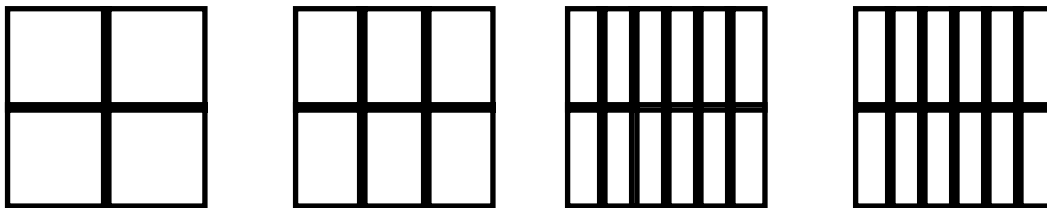
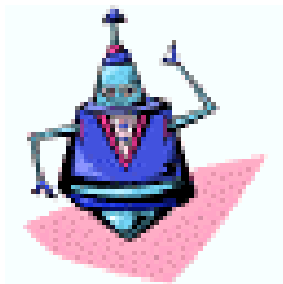
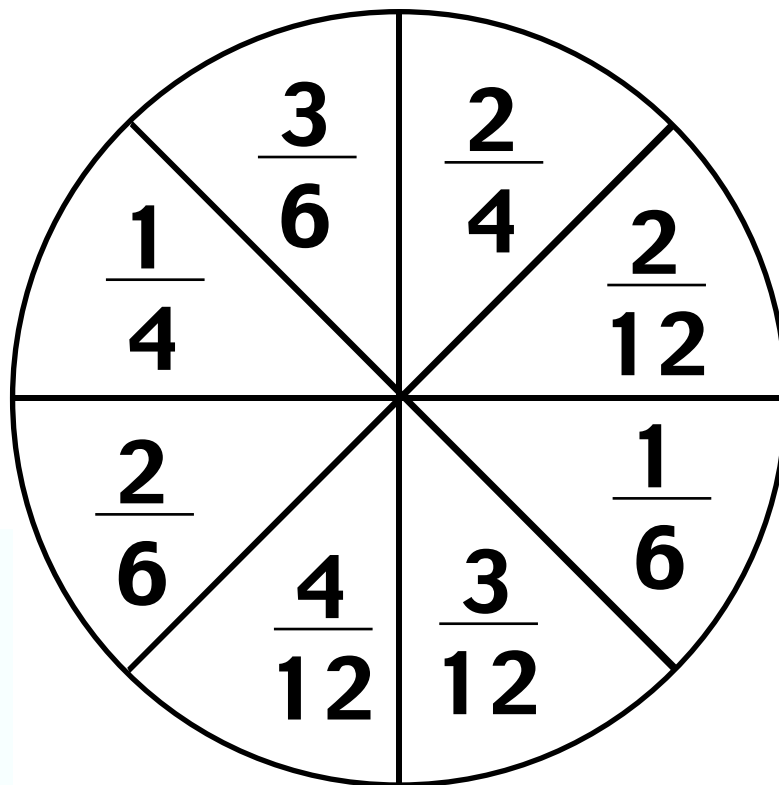
$\frac{5}{3}$	$\frac{7}{4}$	$\frac{9}{5}$
1.9	$\frac{12}{6}$	2.1
$\frac{11}{5}$	$\frac{9}{4}$	$\frac{7}{3}$
2.4	$\frac{5}{2}$	$\frac{8}{3}$

Robot Packing Company

The robots are racing to see who can finish packing first. They have four cartons to fill. One is divided into four parts, one into 6, and two of them are divided into twelve parts. On his turn, each robot spins the spinner and fills a crate with the amount of packing material specified. The robots take turns until one of them can't pack the fractional amount on the spinner. At the end of the game, the robot with the most packed is the winner.



Amount packed _____ Amount empty _____



Amount packed _____ Amount empty _____

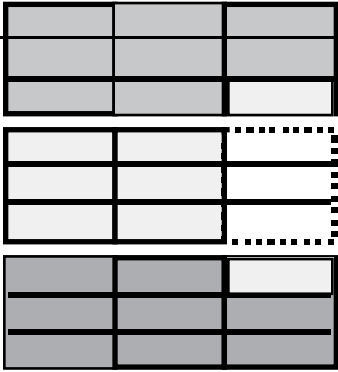
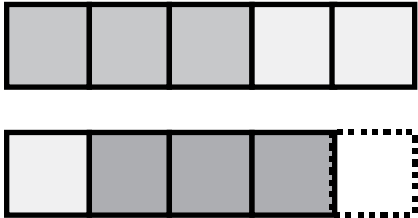
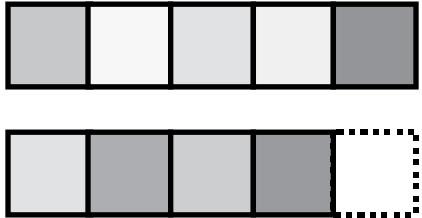
Division of Mixed Numbers with Models

$2 \frac{2}{3} \div 2$		$1 \frac{1}{3}$
$2 \frac{2}{3} \div 4$		$\frac{2}{3}$
$2 \frac{2}{3} \div \frac{1}{6}$		16

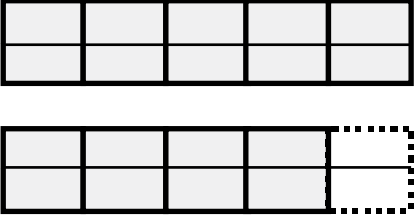
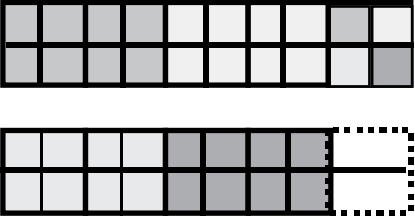
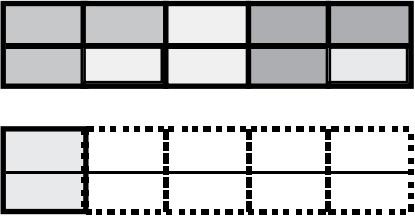
Division of Mixed Numbers with Models

$2 \frac{2}{5} \div 6$		$\frac{2}{5}$
$2 \frac{2}{5} \div \frac{3}{10}$		8
$2 \frac{2}{5} \div 3$		$\frac{4}{5}$

Division of Mixed Numbers with Models

$2 \frac{2}{3} \div 3$		$\frac{8}{9}$
$1 \frac{4}{5} \div 3$		$\frac{3}{5}$
$1 \frac{4}{5} \div 9$		$\frac{1}{5}$

Division of Mixed Numbers with Models

$1\frac{4}{5} \div \frac{1}{10}$		<p>18</p>
$1\frac{4}{5} \div 4$		<p>$\frac{9}{20}$</p>
$1\frac{1}{5} \div \frac{3}{10}$		<p>4</p>

Multiplication and Division of Fractions Square Puzzle

$\frac{7}{12} \times \frac{3}{4}$ $\frac{5}{12}$ $\frac{7}{12}$	$\frac{5}{9} \times \frac{3}{4}$ $\frac{5}{18}$ $\frac{3}{8} \div \frac{3}{4}$	$\frac{5}{8} \div \frac{3}{5}$ $\frac{1}{3} \div \frac{3}{4}$ $\frac{1}{2}$	$\frac{5}{24}$ $\frac{5}{12} \times \frac{3}{4}$ $\frac{3}{5}$
$\frac{7}{8}$ $\frac{5}{12} \div \frac{2}{3}$ $\frac{4}{5} \div \frac{3}{5}$	$\frac{4}{5}$ $\frac{1}{6} \div \frac{3}{4}$ $\frac{5}{12} \times \frac{2}{3}$	$\frac{4}{9}$ $\frac{1}{8} \times \frac{3}{4}$ $\frac{1}{3}$	$\frac{2}{5}$ $\frac{1}{3} \times \frac{3}{4}$ $\frac{5}{16}$
$\frac{1}{9}$ $\frac{1}{8} \times \frac{3}{5}$ $\frac{5}{8}$	$\frac{3}{40}$ $\frac{2}{9}$ $\frac{3}{5} \times \frac{3}{4}$	$\frac{9}{20}$ $\frac{5}{12} \times \frac{4}{5}$ $\frac{1}{2} \div \frac{3}{4}$	$\frac{7}{13}$ $\frac{1}{4}$ $\frac{3}{10} \times \frac{3}{4}$
$\frac{7}{9}$ $\frac{1}{6} \times \frac{3}{4}$ $\frac{8}{13}$	$\frac{1}{8} \div \frac{3}{4}$ $\frac{5}{9}$ $\frac{4}{3} \div \frac{6}{5}$	$\frac{20}{27}$ $\frac{2}{3}$ $\frac{3}{8} \times \frac{8}{3}$	$\frac{4}{7}$ $\frac{9}{32}$ $\frac{5}{12} \div \frac{4}{5}$