

ACTIVITY #16B

	Addends	Whole	Addition Diagram	Sum
1.	$\frac{2}{4} + \frac{1}{3}$			$\frac{10}{12} \left(1\frac{5}{6}\right)$
2.	$\frac{1}{2} + \frac{1}{5}$			$\frac{7}{10}$
3.	$\frac{1}{2} + \frac{2}{6}$			$\frac{5}{6}$
4.	$\frac{1}{2} + \frac{2}{5}$			$\frac{9}{10}$
5.	$\frac{3}{7} + \frac{1}{2}$			$\frac{13}{14}$
6.	$\frac{3}{10} + \frac{2}{5}$			$\frac{7}{10}$
7.	$\frac{1}{2} + \frac{3}{5}$			$\frac{11}{10} \left(1\frac{1}{10}\right)$
8.	$\frac{4}{5} + \frac{2}{7}$			$\frac{38}{35} \left(1\frac{3}{35}\right)$
9.	$\frac{1}{3} + \frac{4}{5}$			$\frac{17}{15} \left(1\frac{2}{15}\right)$
10.	$\frac{3}{4} + \frac{4}{5}$			$\frac{31}{20} \left(1\frac{11}{20}\right)$
11.	$\frac{2}{3} + \frac{4}{7}$			$\frac{26}{21} \left(1\frac{5}{21}\right)$

ACTIVITY 17A

Addends	Whole	Addition Diagram	Renamed Sum
1. $\frac{2}{3} + \frac{2}{3}$		 $\frac{2}{3} + \frac{2}{3} = \frac{4}{3}$	 $1\frac{1}{3}$
2. $\frac{5}{9} + \frac{6}{9}$		 $\frac{5}{9} + \frac{6}{9} = \frac{11}{9}$	 $1\frac{2}{9}$
3. $\frac{3}{4} + \frac{1}{4}$		 $\frac{3}{4} + \frac{1}{4} = \frac{4}{4}$	 1
4. $\frac{5}{8} + \frac{7}{8}$		 $\frac{5}{8} + \frac{7}{8} = \frac{12}{8}$	 $1\frac{4}{8} = 1\frac{1}{2}$
5. $\frac{7}{10} + \frac{9}{10}$		 $\frac{7}{10} + \frac{9}{10} = \frac{16}{10}$	 $1\frac{6}{10} = 1\frac{3}{5}$

ACTIVITY 17B

1. $\frac{3}{5} + \frac{1}{2} = \frac{6}{10} + \frac{5}{10} = \frac{11}{10} = 1\frac{1}{10}$

2. $\frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$

3. $\frac{2}{5} + \frac{1}{2} = \frac{4}{10} + \frac{5}{10} = \frac{9}{10}$

4. $\frac{4}{10} + \frac{3}{5} = \frac{4}{10} + \frac{6}{10} = \frac{10}{10} = 1$

5. $\frac{2}{3} + \frac{5}{6} = \frac{4}{6} + \frac{5}{6} = \frac{9}{6} = 1\frac{3}{6} = 1\frac{1}{2}$

6. $\frac{1}{6} + \frac{5}{12} = \frac{2}{12} + \frac{5}{12} = \frac{7}{12}$

7. $\frac{1}{2} + \frac{7}{10} = \frac{5}{10} + \frac{7}{10} = \frac{12}{10} = 1\frac{2}{10} = 1\frac{1}{5}$

8. $\frac{5}{6} + \frac{1}{2} = \frac{5}{6} + \frac{3}{6} = \frac{8}{6} = 1\frac{2}{6} = 1\frac{1}{3}$

9. $\frac{2}{3} + \frac{4}{5} = \frac{10}{15} + \frac{8}{15} = \frac{18}{15} = 1\frac{3}{15} = 1\frac{1}{5}$

Other addends are possible.

ACTIVITY 18

	Addition	Whole	Addition Diagram	Sum
1.	$2\frac{2}{3} + 1\frac{1}{2}$			$3\frac{7}{6} = 4\frac{1}{6}$
2.	$1\frac{1}{4} + 2\frac{2}{3}$			$3\frac{11}{12}$
3.	$2\frac{1}{4} + 1\frac{1}{3}$			$3\frac{7}{12}$
4.	$1\frac{2}{3} + 1\frac{1}{5}$			$2\frac{13}{15}$
5.	$1\frac{4}{5} + 2\frac{1}{2}$			$3\frac{13}{10} = 4\frac{3}{10}$
6.	$2\frac{1}{4} + 1\frac{3}{5}$			$3\frac{17}{20}$
7.	$3\frac{1}{4} + 1\frac{5}{8}$			$4\frac{7}{8}$
8.	$1\frac{3}{4} + 1\frac{1}{8}$			$3\frac{7}{8}$
9.	$2\frac{3}{5} + 1\frac{1}{3}$			$3\frac{14}{15}$
10.	$1\frac{6}{7} + 2\frac{1}{2}$			$3\frac{19}{14} = 4\frac{5}{14}$
11.	$2\frac{1}{5} + 1\frac{3}{4}$			$3\frac{19}{20}$

ACTIVITY 19A

	Whole	Subtraction Diagram	Difference
			$\frac{5}{6} - \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$
1.			$\frac{3}{4} - \frac{2}{4} = \frac{1}{4}$
2.			$\frac{4}{6} - \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$
3.			$\frac{4}{5} - \frac{2}{5} = \frac{2}{5}$
4.			$\frac{6}{7} - \frac{4}{7} = \frac{2}{7}$
5.			$\frac{7}{9} - \frac{4}{9} = \frac{3}{9} = \frac{1}{3}$

ACTIVITY 19B

	Subtraction	Whole	Subtraction Diagram	Difference
1.	$\frac{2}{3} - \frac{1}{4}$			$\frac{5}{12}$
2.	$\frac{4}{5} - \frac{1}{2}$			$\frac{3}{10}$
3.	$\frac{1}{2} - \frac{1}{5}$			$\frac{3}{10}$
4.	$\frac{5}{9} - \frac{1}{3}$			$\frac{2}{9}$
5.	$\frac{5}{6} - \frac{1}{4}$	 <small>* could also use 24 cubes</small>		$\frac{7}{12}$
6.	$\frac{2}{3} - \frac{1}{5}$			$\frac{7}{15}$
7.	$\frac{1}{3} - \frac{1}{7}$			$\frac{4}{21}$
8.	$\frac{9}{10} - \frac{1}{2}$			$\frac{4}{10} = \frac{2}{5}$

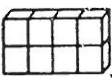
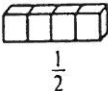




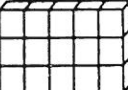





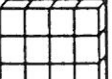


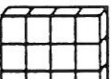


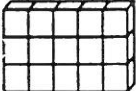


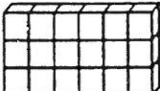
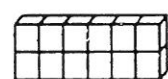
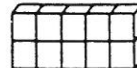
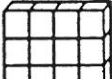



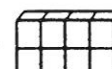

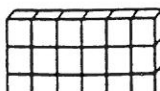
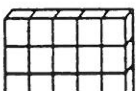

ACTIVITY 19C - See student's Activity Note

	Subtraction	Whole	Diagram	Remainder
	$1\frac{1}{4} - \frac{1}{3}$			$\frac{11}{12}$
1.	$1\frac{2}{3} - \frac{1}{4}$			$1\frac{5}{12}$
2.	$2 - \frac{3}{5}$			$1\frac{2}{5}$
3.	$2\frac{1}{2} - \frac{2}{3}$			$1\frac{5}{6}$
4.	$2\frac{1}{4} - \frac{2}{3}$			$1\frac{7}{12}$
5.	$1\frac{1}{3} - \frac{3}{4}$			$\frac{7}{12}$
6.	$2\frac{1}{2} - 1\frac{1}{4}$			$1\frac{1}{4}$
7.	$2\frac{2}{3} - \frac{3}{4}$			$1\frac{11}{12}$
8.	$2\frac{3}{4} - 1\frac{1}{2}$			$1\frac{1}{4}$
9.	$3\frac{2}{3} - 2\frac{1}{2}$			$1\frac{1}{6}$

ACTIVITY 20A

1.	$\frac{2}{4} \times \frac{2}{3}$		$\frac{2}{4}$ of =	$\frac{2}{4} \times \frac{2}{3} = \frac{4}{12} \left(\frac{1}{3}\right)$
2.	$\frac{2}{3} \times \frac{3}{4}$		$\frac{2}{3}$ of =	$\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} \left(\frac{1}{2}\right)$
3.	$\frac{1}{5} \times \frac{1}{3}$		$\frac{1}{5}$ of =	$\frac{1}{5} \times \frac{1}{3} = \frac{1}{15}$
4.	$\frac{2}{3} \times \frac{1}{5}$		$\frac{2}{3}$ of =	$\frac{2}{3} \times \frac{1}{5} = \frac{2}{15}$
5.	$\frac{3}{4} \times \frac{1}{5}$		$\frac{3}{4}$ of =	$\frac{3}{4} \times \frac{1}{5} = \frac{3}{20}$
6.	$\frac{3}{5} \times \frac{2}{3}$		$\frac{3}{5}$ of =	$\frac{3}{5} \times \frac{2}{3} = \frac{6}{15} \left(\frac{2}{5}\right)$

ACTIVITY 20B

	Multiplication	Whole	Diagram	Product
	$\frac{1}{4} \times \frac{1}{2}$		$\frac{1}{4}$ of  =  $\frac{1}{8}$	$\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$
1.	$\frac{2}{3} \times \frac{2}{4}$		$\frac{2}{3}$ of  = 	$\frac{2}{3} \times \frac{2}{4} = \frac{4}{12} = \frac{1}{3}$
2.	$\frac{1}{3} \times \frac{2}{5}$		$\frac{1}{3}$ of  = 	$\frac{1}{3} \times \frac{2}{5} = \frac{2}{15}$
3.	$\frac{3}{5} \times \frac{1}{2}$		$\frac{3}{5}$ of  = 	$\frac{3}{5} \times \frac{1}{2} = \frac{3}{10}$
4.	$\frac{2}{3} \times \frac{1}{4}$		$\frac{2}{3}$ of  = 	$\frac{2}{3} \times \frac{1}{4} = \frac{2}{12} = \frac{1}{6}$
5.	$\frac{3}{4} \times \frac{2}{3}$		$\frac{3}{4}$ of  = 	$\frac{3}{4} \times \frac{2}{3} = \frac{6}{12} = \frac{1}{2}$
6.	$\frac{2}{3} \times \frac{1}{5}$		$\frac{2}{3}$ of  = 	$\frac{2}{3} \times \frac{1}{5} = \frac{2}{15}$
7.	$\frac{5}{6} \times \frac{2}{3}$		$\frac{5}{6}$ of  = 	$\frac{5}{6} \times \frac{2}{3} = \frac{10}{18} = \frac{5}{9}$
8.	$\frac{2}{4} \times \frac{2}{3}$		$\frac{2}{4}$ of  = 	$\frac{2}{4} \times \frac{2}{3} = \frac{4}{12} = \frac{1}{3}$
9.	$\frac{1}{4} \times \frac{2}{3}$		$\frac{1}{4}$ of  = 	$\frac{1}{4} \times \frac{2}{3} = \frac{2}{12} = \frac{1}{6}$
10.	$\frac{2}{3} \times \frac{5}{6}$		$\frac{2}{3}$ of  = 	$\frac{2}{3} \times \frac{5}{6} = \frac{10}{18} = \frac{5}{9}$

Different answers are possible.

ACTIVITY #21

You may decide not to have students give the algorithm.

	Multiplication	Whole	Diagram	Answer	Algorithm
1.	$1\frac{3}{4} \times 1\frac{1}{2}$		$1\frac{3}{4}$ of		$\frac{7}{4} \times \frac{3}{2} = \frac{21}{8} = 2\frac{5}{8}$
2.	$2\frac{1}{2} \times 1\frac{1}{2}$		$2\frac{1}{2}$ of		$\frac{5}{2} \times \frac{3}{2} = \frac{15}{4} = 3\frac{3}{4}$
3.	$1\frac{1}{2} \times 2\frac{2}{3}$		$1\frac{1}{2}$ of		$\frac{3}{2} \times \frac{8}{3} = \frac{24}{6} = 4$
4.	$1\frac{3}{4} \times 2\frac{1}{2}$		$1\frac{3}{4}$ of		$\frac{7}{4} \times \frac{5}{2} = \frac{35}{8} = 4\frac{3}{8}$
5.	$2\frac{2}{3} \times 1\frac{1}{4}$		$2\frac{2}{3}$ of		$\frac{8}{3} \times \frac{5}{4} = \frac{40}{12} = 3\frac{1}{3}$
6.	$3\frac{1}{2} \times 1\frac{1}{3}$		$3\frac{1}{2}$ of		$\frac{7}{2} \times \frac{4}{3} = \frac{28}{6} = 4\frac{2}{3}$

ACTIVITY # 22

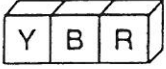

You may decide not to have students give the algorithm as this is not shown by the cubes.

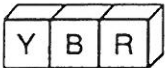
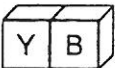
	Division	Whole	Diagram	Answer	Algorithm
1.	$\frac{1}{2} \div \frac{1}{3}$		How many in ?	$\frac{1}{2} \div \frac{1}{3} = 1\frac{1}{2}$	$\frac{1}{2} \times \frac{3}{1} = \frac{3}{2} = 1\frac{1}{2}$
2.	$\frac{1}{2} \div \frac{1}{5}$		How many in ?	$\frac{1}{2} \div \frac{1}{5} = 2\frac{1}{2}$	$\frac{1}{2} \times \frac{5}{1} = \frac{5}{2} = 2\frac{1}{2}$
3.	$\frac{1}{5} \div \frac{1}{2}$		How many in ?	$\frac{1}{5} \div \frac{1}{2} = \frac{2}{5}$	$\frac{1}{5} \times \frac{2}{1} = \frac{2}{5}$
4.	$\frac{1}{3} \div \frac{1}{4}$		How many in ?	$\frac{1}{3} \div \frac{1}{4} = 1\frac{1}{3}$	$\frac{1}{3} \times \frac{4}{1} = \frac{4}{3} = 1\frac{1}{3}$
5.	$\frac{1}{4} \div \frac{2}{3}$		How many in ?	$\frac{1}{4} \div \frac{2}{3} = \frac{3}{8}$	$\frac{1}{4} \times \frac{3}{2} = \frac{3}{8}$
6.	$\frac{1}{2} \div \frac{1}{5}$		How many in ?	$\frac{1}{2} \div \frac{1}{5} = 2\frac{1}{2}$	$\frac{1}{2} \times \frac{5}{1} = \frac{5}{2} = 2\frac{1}{2}$
7.	$\frac{2}{5} \div \frac{1}{2}$		How many in ?	$\frac{2}{5} \div \frac{1}{2} = \frac{4}{5}$	$\frac{2}{5} \times \frac{2}{1} = \frac{4}{5}$

ACTIVITY #1A Seeing Fractions

When cubes are used to name fractions, you must decide how many cubes will be in the whole. Different colours can show the fractions.

If  is one whole,  is $\frac{1}{2}$. 1 is the numerator
2 is the denominator

If  is one whole,  is $\frac{1}{3}$. 1 is the numerator
3 is the denominator

If  is one whole,  is $\frac{2}{3}$. 2 is the numerator
3 is the denominator

Build and record as in the example.

