GRADE 10 ESSENTIAL Name:_____
UNIT X – MULTIPLY MIXED NUMBERS Date: _____

LESSON 11 – MULTIPLY MIXED NUMBERS BY WHOLE NUMBERS

Convert the mixed numbers into '*pure*' improper fractions, then follow the multiply process; straight across the top, straight across the bottom, simplify!

Demonstration:

$4 \times \frac{5}{6} = \frac{4}{1} \times \frac{5}{6}$	**Rename whole numbers and mixed numerals as fractions.**	$4\frac{2}{3} \times 5 = \frac{14}{3} \times \frac{5}{1}$
$= \frac{4 \times 5}{1 \times 6}$	**Multiply the fractions.**	$= \frac{14 \times 5}{3 \times 1}$
$= \frac{20}{6}$		$= \frac{70}{3}$
	Change to simplest form.	
$= 3\frac{1}{3}$		$= 23\frac{1}{3}$

Write each answer in simplest form

$5 \times \frac{2}{3}$ $6 \times \frac{4}{5}$ $\frac{1}{2} \times 9$ $\frac{3}{4} \times 7$

$9 \times \frac{5}{6}$ $\frac{1}{4} \times 6$ $\frac{3}{8} \times 12$ $10 \times \frac{4}{5}$

$2\frac{1}{2} \times 3$ $1\frac{1}{3} \times 5$ $2 \times 3\frac{2}{5}$ $4 \times 4\frac{2}{3}$

PROBLEM SOLVE. Write each answer in simplest form

1. In a class of 30, $\frac{2}{3}$ of the people have brown hair. How many people in the class have brown hair?

_____ people have brown hair.

1.

2. A plumber expects a job to take 10 h. The plumber has already worked $\frac{4}{5}$ of that time. How many hours has the plumber worked?

2.

3. In a relay, 12 students ran $\frac{7}{8}$ of a lap around the track. How long was the relay?

The relay was _____ laps long.

3.

4. It takes Lily $\frac{5}{8}$ h to solve a puzzle. How long would it take her to solve 15 such puzzles?

It would take her _____ h.

4.

5. Mark practised the piano for $\frac{3}{4}$ h on each of four days. How many hours did he practise in all?

Mark practised _____ h in all.

5.

6. It takes Ella $\frac{1}{4}$ h to walk around her block. How long would it take her to walk around her block six times?

It would take her _____ h.

6.

MrF

LESSON 12 MULTIPLY MIXED NUMBERS BY MIXED NUMBERS

$2\frac{3}{5} \times 1\frac{1}{6} = \frac{13}{5} \times \frac{7}{6}$ **Change the mixed numerals to fractions.**

$= \frac{13 \times 7}{5 \times 6}$ Multiply the fractions.

$= \frac{91}{30}$

$= 3\frac{1}{30}$ **Change to simplest form.**

Write each answer in simplest form:

$4\frac{2}{3} \times 1\frac{2}{5}$ $3\frac{1}{2} \times 1\frac{1}{6}$ $1\frac{2}{3} \times 2\frac{1}{2}$ $2\frac{2}{3} \times 2\frac{2}{3}$

$\frac{14}{3} \cdot \frac{7}{5}$
$= \frac{98}{15} = 6\frac{8}{15}$

$2\frac{2}{5} \times 2\frac{1}{4}$ $1\frac{7}{10} \times 2\frac{1}{2}$ $5\frac{1}{3} \times 1\frac{1}{5}$ $2\frac{4}{5} \times 1\frac{1}{7}$

$3\frac{3}{4} \times 2\frac{1}{3}$ $3\frac{2}{5} \times 1\frac{7}{8}$ $4\frac{2}{3} \times 1\frac{1}{8}$ $3\frac{3}{4} \times 3\frac{1}{3}$

Nasty!

$5\frac{1}{6} \times 6\frac{3}{8}$ $2\frac{3}{5} \times 2\frac{1}{2}$ $1\frac{1}{4} \times 1\frac{1}{4}$ $3\frac{1}{8} \times 6\frac{2}{3}$

$\frac{31}{6} \cdot \frac{51}{8}$
$= \frac{1581}{48} =$
$= 32\frac{45}{48}$
$= 32\frac{15}{16}$

Make sure you know how a calculator does fractions!

Problem Solving. Solve each problem, write the solution in simplest form

1. Anna can read a 90-page book in $2\frac{2}{3}$ h. How long would it take her to read $1\frac{1}{3}$ of these books?

She would take _____ h.

1.

2. It takes $1\frac{4}{5}$ h to process 1 truckload of ore. How many hours would it take to process $3\frac{1}{3}$ truckloads of ore?

It would take _____ h.

2.

3. June's dog's mass is $3\frac{3}{4}$ times her cat's mass. June's mass is $3\frac{1}{2}$ times her dog's mass. How many times her cat's mass is June's mass?

June's mass is _____ times her cat's mass.

3.

4. The boys can walk $6\frac{1}{2}$ times around the track in 1 h. How many times can they walk around the track in $1\frac{1}{6}$ h?

They can walk _____ times around the track.

4.

5. In problem **4**, how many times around the track can the boys walk in $3\frac{1}{2}$ h?

They can walk _____ times around the track.

5.

6. Riding her bicycle, Terry can circle her neighbourhood $9\frac{1}{2}$ times in an hour. How many times could she circle the neighbourhood in $2\frac{2}{3}$ h?

She could circle the neighbourhood _____ times.

6.

7. In problem **6**, how many times could Terry circle her neighbourhood in $3\frac{1}{4}$ h?

She could circle the neighbourhood _____ times.

7.

8. A machine can process $2\frac{1}{2}$ tonnes in 1 h. How many tonnes can the machine process in $2\frac{1}{10}$ h?

The machine can process _____ tonnes in $2\frac{1}{10}$ h.

8.

9. If the machine in problem **8** broke down after $1\frac{1}{2}$ h, how many tonnes would have been processed?

_____ tonnes would have been processed.

9.