Multiplying with decimals

Remember: ***Multiplication by a whole number is repeated addition!*** For example:

$$4 \times 105 = 105 + 105 + 105 + 105 = \underline{\quad}$$

$$4 \times 0.2 = 0.2 + 0.2 + 0.2 + 0.2 = \underline{\quad}$$

$$2 \times 1.6 = 1.6 + 1.6 = \underline{\quad}$$

$$3 \times 0.5 = 0.5 + 0.5 + 0.5 = \underline{\quad}$$

It's easy! Just remember your answer will have tenths too so you will not get fooled. Compare these problems:

$3 \times 40 = 40 + 40 + 40 = \underline{\quad}$ $6 \times 70 =$

$3 \times 4 = 4 + 4 + 4 = \underline{\quad}$ $6 \times 7 =$

$3 \times 0.4 = 0.4 + 0.4 + 0.4 = \underline{\quad}$ $6 \times 0.7 =$

Practice

1. Multiply by a whole number and compare the problems. Think of the addition - but you can get help from knowing your multiplication tables too.

a. $5 \times 100 = \underline{\quad}$ $5 \times 10 = \underline{\quad}$ $5 \times 1 = \underline{\quad}$ $5 \times 0.1 = \underline{\quad}$	**b.** $3 \times 200 = \underline{\quad}$ $3 \times 20 = \underline{\quad}$ $3 \times 2 = \underline{\quad}$ $3 \times 0.2 = \underline{\quad}$	**c.** $5 \times 600 = \underline{\quad}$ $5 \times 60 = \underline{\quad}$ $5 \times 6 = \underline{\quad}$ $5 \times 0.6 = \underline{\quad}$	**d.** $7 \times 800 = \underline{\quad}$ $7 \times 80 = \underline{\quad}$ $7 \times 8 = \underline{\quad}$ $7 \times 0.8 = \underline{\quad}$
e. $12 \times 100 = \underline{\quad}$ $12 \times 10 = \underline{\quad}$ $12 \times 1 = \underline{\quad}$ $12 \times 0.1 = \underline{\quad}$	**f.** $9 \times 300 = \underline{\quad}$ $9 \times 30 = \underline{\quad}$ $9 \times 3 = \underline{\quad}$ $9 \times 0.3 = \underline{\quad}$	**g.** $2 \times 800 = \underline{\quad}$ $2 \times 80 = \underline{\quad}$ $2 \times 8 = \underline{\quad}$ $2 \times 0.8 = \underline{\quad}$	**h.** $10 \times 800 = \underline{\quad}$ $10 \times 80 = \underline{\quad}$ $10 \times 8 = \underline{\quad}$ $10 \times 0.8 = \underline{\quad}$

2. Continue the patterns!

a.	b.	c.	d.	e.
$7 \times 0.1 =$ ____	$8 \times 0.1 =$ ____	$10 \times 0.1 =$ ____	$1 \times 1.1 =$ ____	$1 \times 1.5 =$ ____
$7 \times 0.2 =$ ____	$8 \times 0.2 =$ ____	$10 \times 0.2 =$ ____	$2 \times 1.1 =$ ____	$2 \times 1.5 =$ ____
$7 \times 0.3 =$ ___	$8 \times 0.3 =$ ___	$10 \times 0.3 =$ ___	$3 \times 1.1 =$ ___	$3 \times 1.5 =$ ___
$7 \times 0.4 =$ ___	$8 \times 0.4 =$ ___	$10 \times 0.4 =$ ___	$4 \times 1.1 =$ ___	$4 \times 1.5 =$ ___

3. Explain *why* 5×0.3 is NOT 0.15.

4. 0.5 is one half. How can you easily find the answers to these? Compare the problems.

a. $8 \times 1 =$ ____ $\quad$ $8 \times 0.5 =$ ____	b. $6 \times 1 =$ ____ $\quad$ $6 \times 0.5 =$ ____	c. $14 \times 1 =$ ____ $\quad$ $14 \times 0.5 =$ ____	d. $22 \times 1 =$ ____ $\quad$ $22 \times 0.5 =$ ____
e. $6 \times 0.5 =$ ____ $7 \times 0.5 =$ ____ $8 \times 0.5 =$ ____ $9 \times 0.5 =$ ____	f. $10 \times 0.5 =$ ____ $11 \times 0.5 =$ ____ $12 \times 0.5 =$ ____ $13 \times 0.5 =$ ____	g. $32 \times 0.5 =$ ____ $33 \times 0.5 =$ ____ $34 \times 0.5 =$ ____ $35 \times 0.5 =$ ____	h. $100 \times 0.5 =$ ____ $101 \times 0.5 =$ ____ $102 \times 0.5 =$ ____ $103 \times 0.5 =$ ____
i. $46 \times 0.5 =$ ____	j. $19 \times 0.5 =$ ____	k. $70 \times 0.5 =$ ____	l. $21 \times 0.5 =$ ____