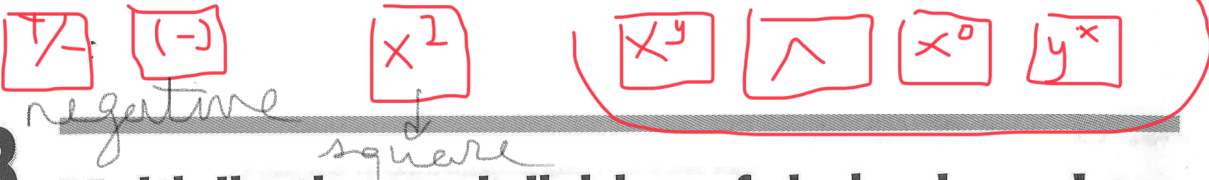


4.3

Multiplication and division of decimal numbers



ACTIVITY 1 Multiplying by a power of 10

Samantha works in a store and earns an hourly salary of \$9.56.

- This week she worked only 10 hours. What was her salary? _____
- Last month she worked a total of 100 hours. What was her salary? _____

MULTIPLYING BY POWERS OF 10

- To multiply a decimal number by 10, 100 or 1000, simply move the decimal point to the right 1, 2 or 3 places, respectively.
Ex.: $3.458 \times 100 = 345.8$ $0.005\ 674 \times 10\ 000 = 56.74$
- To multiply a decimal number by 0.1, 0.01 or 0.001, simply move the period to the left 1, 2 or 3 places, respectively.
Ex.: $456.3 \times 0.1 = 45.63$ $4.29 \times 0.001 = 0.004\ 29$

1. Perform the following multiplications.

- $3.5 \times 1000 = \underline{3500}$
- $245.1 \times 100 = \underline{\hspace{2cm}}$
- $0.003\ 56 \times 10\ 000 = \underline{\hspace{2cm}}$
- $0.257 \times 10 = \underline{\hspace{2cm}}$
- $1.2 \times 100\ 000 = \underline{\hspace{2cm}}$
- $0.000\ 86 \times 1\ 000\ 000 = \underline{\hspace{2cm}}$

2. Perform the following multiplications.

- $0.89 \times 0.001 = \underline{0.0089}$
- $34.789 \times 0.01 = \underline{\hspace{2cm}}$
- $123.4 \times 0.0001 = \underline{\hspace{2cm}}$
- $0.45 \times 0.1 = \underline{\hspace{2cm}}$
- $743.8 \times 0.0001 = \underline{\hspace{2cm}}$
- $12\ 580 \times 0.000\ 001 = \underline{\hspace{2cm}}$

ACTIVITY 2 At the market

At the market, Mrs. Rochester bought 6.2 kg of tomatoes for \$4.19 per kilogram and Mrs. Smith bought 3.4 kg of potatoes for \$2.98 per kilogram.

- Estimate the cost of Mrs. Rochester's purchase. _____
- What was the exact amount of her purchase? _____
- Estimate the cost of Mrs. Smith's purchase. _____
- What was the exact amount of her purchase? _____

MULTIPLICATION OF DECIMAL NUMBERS

- To multiply 2 decimal numbers,
 - multiply them as if they were natural numbers.
 - count the total number of decimal places in the 2 factors.
 - put the period in the result so that the number of decimal places is equal to the above.

Ex.:

$$\begin{array}{r}
 35.18 \\
 \times 4.7 \\
 \hline
 24626 \\
 14072 \\
 \hline
 165.346
 \end{array}$$

← 3 digits
← 3 digits

3. Estimate the result of each multiplication by rounding each factor to the nearest unit, then perform the calculations to find the exact answer. *round*

	Multiplication	Estimate	Exact answer
a)	43.56×5	$44 \times 5 = 220$	
b)	3.417×4.8		
c)	6.1×19.79		
d)	24.2×6.8		

4. Perform each of the following multiplications.

a) $3.6 \times 5 =$ _____ b) $0.4 \times 1.2 =$ _____ c) $2.5 \times 4 =$ _____
 d) $4.2 \times 0.3 =$ _____ e) $-14.8 \times -0.5 =$ _____ f) $0.8 \times 0.7 =$ _____
 g) $-5.8 \times 0.02 =$ _____ h) $1.18 \times 0.4 =$ _____ i) $-5 \times 4.5 =$ _____
 j) $4.25 \times 0.8 =$ _____ k) $3.45 \times 1.8 =$ _____ l) $-2.4 \times -0.05 =$ _____

5. If $a = 3.18$, $b = 4.9$ and $c = 2.76$, find the value of:

a) $a \times b =$ _____ b) $a \times c =$ _____
 c) $b \times c =$ _____ d) $a \times b \times c =$ _____

6. Complete the following table.

\times	3.5	0.5	1.42
0.24			
23.8			
0.08			

7. Perform the given operations using 2 different methods.

- Applying the order of priority of operations.
- Applying the distributive property of multiplication over addition or subtraction.

a) $3.2 \times (1.4 + 5.6) =$ _____ b) $-1.2 \times (3.75 - 2.4) =$ _____
 = _____ = _____
 c) $-4.56 \times (1.2 - 7) =$ _____ d) $2.5 \times (0.45 + 1.2) =$ _____
 = _____ = _____

8. Factor out the greatest common factor of the sums and differences below, rewriting each as a product, then calculate each product.

a) $3.8 \times 6 - 3.8 \times 4 =$ _____ b) $2.4 \times 7 + 2.4 \times 3 =$ _____
 c) $4.2 \times 7 + 4.2 \times 5 - 4.2 \times 9 =$ _____ d) $7 \times 6.8 + 7 \times 3.2 =$ _____
 e) $3.2 + 4.8 =$ _____ f) $2.4 + 4.8 - 3.6 =$ _____

9. Calculate the following powers.

a) $(0.3)^2 =$ _____ b) $(0.05)^2 =$ _____ c) $(1.2)^3 =$ _____ d) $(1.4)^0 =$ _____
 e) $(2.18)^1 =$ _____ f) $(0.9)^3 =$ _____ g) $(2.8)^2 =$ _____ h) $(0.8)^4 =$ _____

10. Perform the following calculations.

a) $(4.2)^2 \times (0.08)^2 =$ _____ b) $(3.8)^1 \times (0.5)^3 =$ _____
c) $(0.75)^2 \times (0.8)^2 =$ _____ d) $(1.2)^3 \times 0.25 =$ _____

11. Find the value of a in each of the following cases.

a) $a^2 = 0.25$ $0.5^2 = 0.25$ b) $(0.4)^a = 0.0256$ _____ c) $(2.5)^3 = a$ _____
d) $a^4 = 0.0016$ _____ e) $(0.08)^a = 0.0064$ _____ f) $(4.18)^a = 1$ _____

12. Martin works in a convenience store several evenings during the week. His hourly salary is \$7.25. What would his salary be for a week in which he works 4 nights for 3.5 hours a night?

13. Mrs. Long buys 2.25 kg of tomatoes at the supermarket for \$1.48 per kilogram. How much did her purchase cost?

14. A family of five goes to the circus. If each ticket costs \$24.95, how much will this family pay?

15. Mr. Dunlop put 20.8 litres of gas in his gas tank. The cost of the gas is \$0.65 per litre. How much did he pay?

16. In the United States, gas is sold in gallons.
1 gallon = 3.785 litres and 1 gallon costs \$1.15 US.
Mr. Scott buys 14.2 gallons of gas.

- a) What is this volume of gas in litres? _____
- b) How much does Mr. Scott have to pay
1. in American dollars? _____
 2. in Canadian dollars if \$1 US = \$1.32 CAN? _____

17. A mechanic earns \$23.60 per hour. What will his weekly salary be if he works 7.5 hours a day for 5 days?

18. On average, a petroleum reservoir produces 24.5 barrels of petroleum per day. What is the quantity, in litres, of petroleum produced at this reservoir over a 24 hour period if there are approximately 175.45 L in a barrel?
