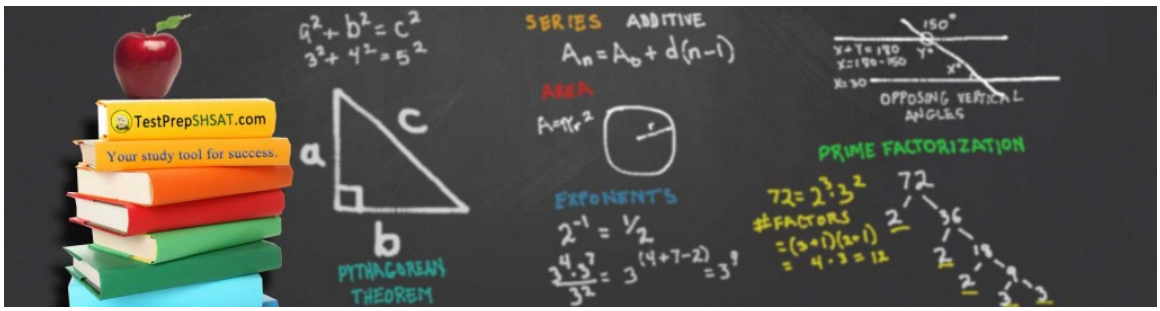
Name: Date:



WORKSHEET :

Decimal Operations

1.	3.345 + 10.127 =	15.23 - 27.76 =	0.03756 - 0.4 =
2.	0.05 × 0.004 × 0.33 =	0.5 × 0.4 × 0.3 =	0.05 × 0.004 × 0.33 =
3.	0.05 × 2.002 × 0.03 =	0.008 × 0.014 × 0.3 =	0. 5 × 0.004 × 0.5 × 0.05 =
4.	290 × 0.447 =	99.9 × 6.32 =	0.04 × 9.34 × 0.008 =
5.	90 ÷ 0.03 =	99.9 ÷ 1.11 =	5.1 ÷ 0.017 =
6.	360 ÷ (0.4 × .03) =	99.9 ÷ (3 × .01 × .11) =	1.44 ÷ (0.08 × 0.009) =
7.	290 ÷ 0.447 =	99.9 ÷ 6.32 =	9.34 ÷ 0.08 =
8.	(1.2 × 0.4 × 0.003) ÷ (0.08 × 0.009) =	(169 × 0.4 × 0.003) ÷ (0.08 × 0.009 × 0.13) =	(0.81 × 0.3 × 0.003) ÷ (243 × 0.009 × 0.03) =
9.	(80 × 0.4 × 0.09) ÷ (0.144 × 0.02 × 0.05) =	(6.3 × 0.4) ÷ (0.7 × 0.018 × 0.02) =	(400 × 0.3 × 0.003) ÷ (30 × 0.0012) =
10.	(0.15 × 0.4 × 0.0018) ÷ (0.324 × 60 × 0.05) =	(0.8 × 0.04) ÷ (16 × 2 × 0.05) =	(0.002 × 0.08 × 0.12) ÷ (0.4 × 0.009 × 8) =

ANSWERS :

Decimal Operations

1.	3.345 + 10.127 = 13.472	15.23 - 27.76 = -12.53	0.03756 - 0.4 = -0.36244
2.	0.05 × 0.004 × 0.33 = 0.000066	0.5 × 0.4 × 0.3 = 0.06	0.05 × 0.004 × 0.33 = 0.000066
3.	0.05 × 2.002 × 0.03 = 0.003003	0.008 × 0.014 × 0.3 = 0.0000336	0. 5 × 0.004 × 0.5 × 0.05 = 0.00005
4.	290 × 0.447 = 129.63	99.9 × 6.32 = 631.368	0.04 × 9.34 × 0.008 = 0.0029888
5.	90 ÷ 0.03 = 3,000	99.9 ÷ 1.11 = 90	5.1 ÷ 0.017 = 300
6.	360 ÷ (0.4 × .03) = 30,000	99 ÷ (3 × .01 × .11) = 30,000	1.44 ÷ (0.08 × 0.009) = 2,000
7.	Round the quotient to 2 decimal places		
	290 ÷ 0.447 = 648.77	99.9 ÷ 6.32 = 15.81	9.34 ÷ 0.08 = 116.75
8.	(1.2 × 0.4 × 0.003) ÷ (0.08 × 0.009) = 2	(169 × 0.4 × 0.003) ÷ (0.08 × 0.009 × 0.13) = 2,166.66...	(0.81 × 0.3 × 0.003) ÷ (243 × 0.009 × 0.03) = 0.0111...
9.	(80 × 0.4 × 0.09) ÷ (0.144 × 0.02 × 0.05) = 20,000	(6.3 × 0.4) ÷ (0.7 × 0.018 × 0.02) = 10,000	(400 × 0.3 × 0.003) ÷ (30 × 0.0012) = 10
10.	(0.15 × 0.4 × 0.0018) ÷ (0.324 × 60 × 0.05) = 0.000111...	(0.8 × 0.04) ÷ (16 × 2 × 0.05) = 0.02	(0.002 × 0.08 × 0.12) ÷ (0.4 × 0.009 × 8) = 0.000666...

KEY CONCEPTS:

Decimal Addition/Subtraction:
Align the numbers (and digit places) vertically. This will help avoid errors. e.g. Row 1

$$\begin{array}{r} 3.345 \\ 10.127 + \\ \hline 13.472 \end{array}$$

Decimal Multiplication:
Step 1: Multiply all the numbers as if integers.
Step 2: Add up all the digits to the right of the decimal.
Step 3: Add back the decimal point the resulting number of places to the left.

The integer calculation should be easier and the decimal point location will be more accurate. e.g. Row 2,3,4

Step 1: $0.05 \times 0.004 \times 0.33 = (5 \times 4 \times 33) = 20 \times 33 = 660$
Step 2: 7 digits to the right of decimal points in all
Step 3: Move the decimal point 7 places to the left. 660 ➔ 0.000066

Decimal Division (denominator only):
Step 1: Convert decimal figures in the denominator to integers
Step 2: Move the decimal an equal amount in the numerator.
Step 3: Do the integer division

The integer division should be easier and the decimal point location will hopefully be more accurate. e.g. Rows 5,6,7

90 ÷ 0.03 =
Step 1: .03 ➔ 3
Step 2: 90.0 ➔ 9000
Step 3: 9000/3 = 3000

360 ÷ (0.4 × .03) =
Step 1: $0.4 \times 0.3 = 4 \times 3$ move decimal 3 places
Step 2: 360 ➔ 360000
Step 3: $360000/(3 \times 4) = (3 \times 120000)/(3 \times 4) = 120000/4 = (4 \times 30000)/4 = 30{,}000$

** Note it is useful to factor numbers and simplify the expression by cancelling numerator to denominator. Simplify before calculate whenever possible **

Decimal Division (numerator & denominator only):
Step 1: Convert decimal figures to integers and powers of 10.
Step 2: Separate the integers multiplication/division form the powers of 10.
Step 3: Factor and simplify the integer expression to simplest form and then calculate.
- if the result is a fraction then convert the fraction to decimal form
Step 4: Calculate the powers of 10 expression separately
Step 5: Convert the result back to decimal form

The integer division should be easier and the decimal point location will hopefully be more accurate. e.g. Rows 8,9

(1.2 × 0.4 × 0.003) ÷ (0.08 × 0.009) =
Step 1: $(12 \times 10^{-1})(4 \times 10^{-1})\ (3 \times 10^{-3})\ /(8 \times 10^{-2})\ (9 \times 10^{-3})$
Step 2: $(12 \times 4 \times 3)\ /(8 \times 9) \times (10^{-1} \times 10^{-1} \times 10^{-3})\ /(10^{-2} \times 10^{-3})$
Step 3: $(12 \times 4 \times 3)\ /(8 \times 9) = (2 \times 2 \times 3 \times 4 \times 3)\ /(2 \times 2 \times 2 \times 3 \times 3) = 4/2 = 2$
Step 4: $(10^{-1} \times 10^{-1} \times 10^{-3})\ /(10^{-2} \times 10^{-3}) = (10^{-5})\ /(10^{-5}) = 10^{0}$
Step 5: $2 \times 10^{0} = 2.0$

e.g. Rows 10

(0.8 × 0.04) ÷ (16 × 2 × 0.05) =
Step 1: $(8 \times 10^{-1})(4 \times 10^{-2})/(16 \times 10^{0})(2 \times 10^{0})\ (5 \times 10^{-2})$
Step 2: $(8 \times 4)\ /(16 \times 2 \times 5) \times (10^{-1} \times 10^{-2})\ /(10^{-2})$
Step 3: $(1 \times 2)\ /(2 \times 1 \times 5) = (2)\ /(10) = 2/10 = 0.2$
Step 4: $(10^{-1} \times 10^{-2})\ /(10^{-2}) = (10^{-1-2-(-2)}) = 10^{-1}$
Step 5: $0.2 \times 10^{-1} = 0.02$

** Use any and all tips for decimals as you feel comfortable. The goal of each is to simplify the expression before calculations to reduce the complexity and number of calculations which results in less mistakes and less time spent on each problem. **