

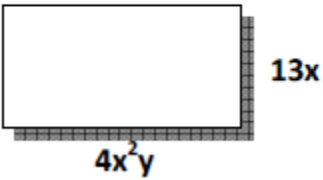
MATH PLUS HONORS – UNIT 3 EXPONENTIALS – TEST REVIEW

Simplifying Monomials

Final answers must have positive exponents only!

1. $6ab - 8ab$	2. $-2xy^2 - 4xy + 6xy^2$
3. Subtract $-6b$ from $8b$	4. $7n^4 \cdot n^2$
5. $8x^5 \cdot -3x^4$	6. $v^4 \cdot 7v^3 \cdot 5v$
7. $(2y^3)^2$	8. $(-4x^4)^3$
9. $(-a^6b)^2$	10. $(-2y^4) \cdot (xy^3)^2 - 13x^2y^{10}$

Find the **perimeter** and **area** of the following:



1. Annual sales for a fast food restaurant are \$650,000 and are increasing at a rate of 4% per year. Write an exponential growth function, then find the annual sales after 7 years.

2. The population of a school is 800 students and is increasing at a rate of 2% per year. Write an exponential growth function, then find the population of the school after 9 years.

The population of a town is 2500 and is decreasing at a rate of 3.5% per year. Write an exponential decay function to find the population of the town after 5 years.

Daniel's Print Shop purchased a new printer for \$35,000. Each year it depreciates at a rate of 5%. Write an exponential decay function to find its approximate value after 8 years.

1.) Your 3 year investment of \$20,000 received 5.2% interest compounded semi annually. What is your total return?

Problem 4: How much money would you need to deposit today at 5% annual interest compounded monthly to have \$20000 in the account after 9 years?

Jasmine invests \$2,658 in a retirement account with a fixed annual interest rate of 9% compounded continuously. What will the account balance be after 15 years?

Anjali invests a sum of money in a retirement account with a fixed annual interest rate of 6.79% compounded continuously. After 20 years, the balance reaches \$14,037.16. What was the amount of the initial investment?

a. Iodine-131 is used to destroy thyroid tissue in the treatment of an overactive thyroid. The half-life of iodine-131 is 8 days. If a hospital receives a shipment of 200 g of iodine-131, how much I-131 would remain after 32 days?

b. Technetium-99 is used for brain scans. If a laboratory receives a shipment of 200 g of this isotope, how much will remain after 24 hours. The half life of Technetium-99 is 6 hours.

c. Mercury -197 is used for kidney scans and has a half-life of 3 days. If the 32 grams of mercury-197 is ordered, but takes 15 days to arrive, how much would arrive in the shipment?

(A) starting mass = 200 g
 half life = 8 days
 total decay time = 32 days

time(days)	mass(g)
0	200
8	100
16	50
24	25
32	<u>12.5g</u>

(B) starting mass = 200 g
 half life = 6 hrs
 total decay time = 24 hrs

time(hr)	mass(g)
0	200g
6	100
12	50
18	25
24	<u>12,5 g</u>

(C) starting mass = 32 g
 half life = 3 days
 total decay time = 15 days

0	32
3	16
6	8
9	4
12	2
15	<u>1</u>

Determine whether each table represents an *exponential growth function*, an *exponential decay function*, or *neither*.

a.

x	y
0	270
1	90
2	30
3	10

b.

x	0	1	2	3
y	5	10	20	40

Determine whether each function represents *exponential growth* or *exponential decay*. Identify the percent rate of change.

a. $y = 5(1.07)^t$

b. $f(t) = 0.2(0.98)^t$