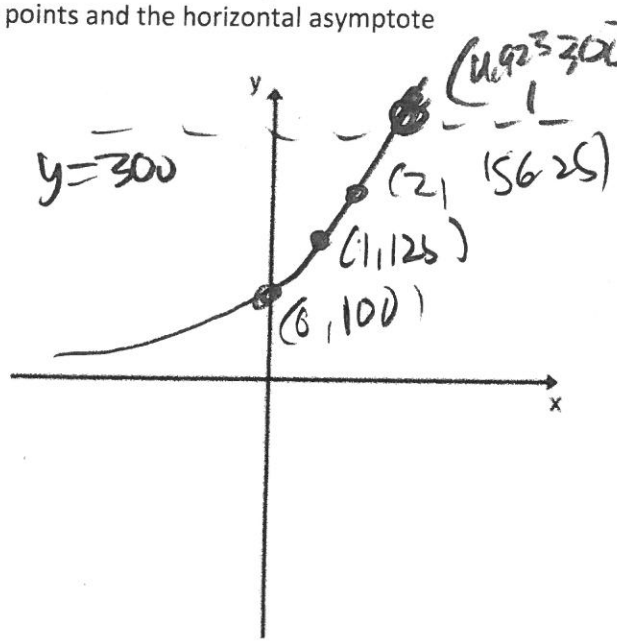
Name_____Formative Assessments basics of Exponential change model hour_____

For each set of mathematical model facts answer the related questions below it

Sketch a quick graph of the given model label the first three points and the horizontal asymptote



Mathematical Facts

You are given an initial amount of 100. You have a change factor of 1.25

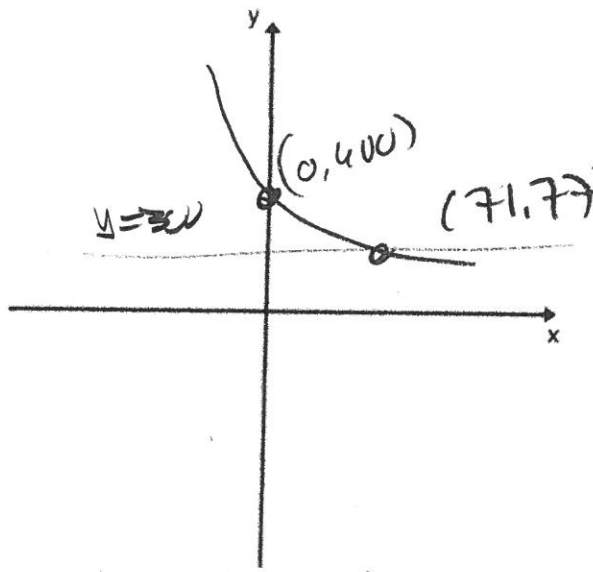
1. Build the exponential change model
   $y = 100(1.25)^x$
2. State the change rate as a decimal 0.25
3. State the change rate as a percentage 25%
4. This is exponential _____ model
   a. Growth
   b. Decay
   c. Neither
5. Determine when your model will reach an amount of 300
   Round to three decimal places
   $x \approx 4.923$

$r = |b-1| = |1.25-1| = 0.25$

$r\% = 100r = 100(0.25) = 25\%$

For each set of mathematical model facts answer the related questions below it

Sketch a quick graph of the given model label the first three points and the horizontal asymptote



Mathematical Facts

You are given an initial amount of 400. You have a change rate of 0.4%. This is a decay model

6. Build the exponential change model
   $y = 400(0.996)^x$
7. State the change rate as a decimal 0.004
8. State the change factor 0.996
9. Determine when your model will reach an amount of 300
   Round to three decimal places
   $x \approx 71.777$

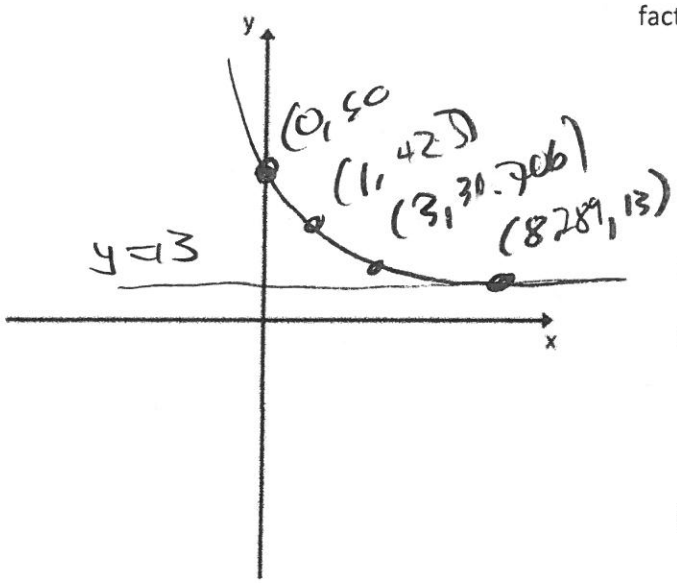
$b = 1 - r = 1 - 0.004$

$b = 0.996$

$r\% = 0.4\% \rightarrow r = \frac{0.4}{100}$

$\boxed{r = 0.004}$

Sketch a quick graph of the given model label the first three points and the horizontal asymptote



Mathematical Facts

You are given an initial amount of 50. You have a change factor of 0.85

10. Build the exponential change model
$y = 50(0.85)^x$

11. State the change rate as a decimal 0.15

12. State the change rate as a percentage 15%

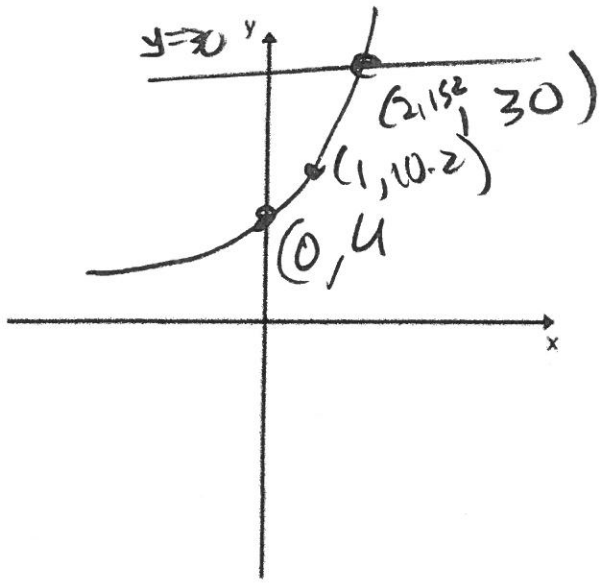
13. This is exponential _____ model
    a. Growth
    b. Decay
    c. Neither

14. Determine when your model will reach an amount of 13
    Round to three decimal places

$x \approx 8.289$

For each set of mathematical model facts answer the related questions below it

Sketch a quick graph of the given model label the first three points and the horizontal asymptote



$r\% = 155\%$

$r = \frac{155}{100} = 1.55$

Mathematical Facts

You are given an initial amount of 4. You have a change rate of 155%. This is a growth model

15. Build the exponential change model
$y = 4(2.55)^x$

16. State the change rate as a decimal 1.55

17. State the change factor 2.55

18. Determine when your model will reach an amount of 30
    Round to three decimal places

$x \approx 2.152$

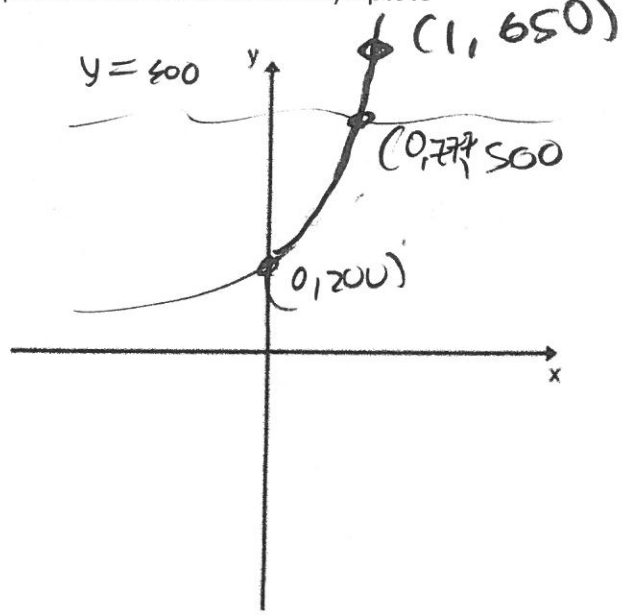
$b = 1 + 1.55$

$b = 2.55$

Name_____Formative Assessments basics of Exponential change model hour_____

For each set of mathematical model facts answer the related questions below it

Sketch a quick graph of the given model label the first three points and the horizontal asymptote



Mathematical Facts

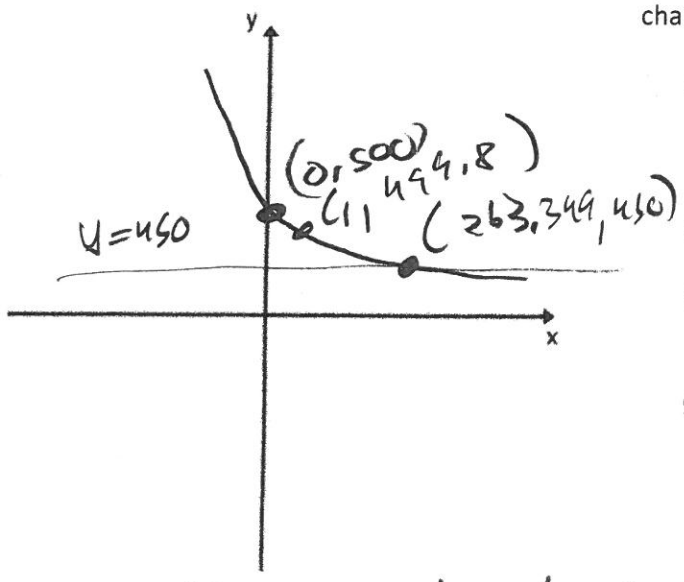
You are given an initial amount of 200. You have a change factor of 3.25

1. Build the exponential change model
   $y = 200(3.25)^x$
2. State the change rate as a decimal 2.25
3. State the change rate as a percentage 225%
4. This is exponential _____ model
   a. Growth
   b. Decay
   c. Neither
5. Determine when your model will reach an amount of 500
   Round to three decimal places
   $x = 0.777$

$b = 3.25$ $r = b - 1$
$= 3.25 - 1$
$= 2.25$

For each set of mathematical model facts answer the related questions below it

Sketch a quick graph of the given model label the first three points and the horizontal asymptote



Mathematical Facts

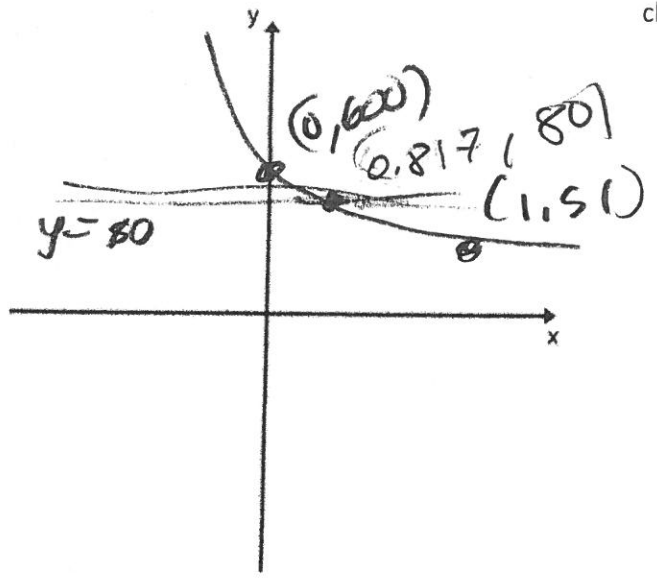
You are given an initial amount of 500. You have a change rate of 0.04%. This is a decay model

6. Build the exponential change model
   $y = 500(0.9996)^x$
7. State the change rate as a decimal 0.0004
8. State the change factor 0.9996
9. Determine when your model will reach an amount of 450
   Round to three decimal places
   $x \approx 263.349$

$r\% = 0.04\%$ $b = 1 - 0.0004$

$r = \frac{0.04}{100} = 0.0004$ $b = 0.9996$

Sketch a quick graph of the given model label the first three points and the horizontal asymptote



Mathematical Facts

You are given an initial amount of 600. You have a change factor of 0.085

10. Build the exponential change model
$y = 600(0.085)^x$

11. State the change rate as a decimal 0.915

12. State the change rate as a percentage 91.5%

13. This is exponential _____ model
    a. Growth
    b. Decay
    c. Neither

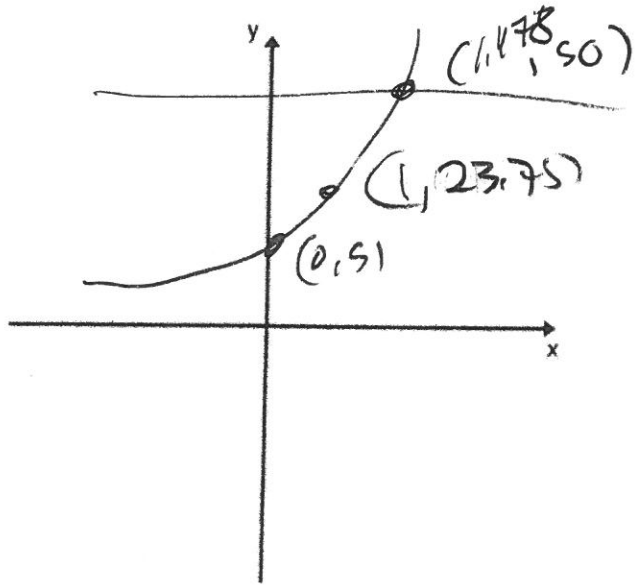
14. Determine when your model will reach an amount of 80
    Round to three decimal places

$b = 0.085 \rightarrow r = 1 - 0.085$ $\quad x \approx 0.817$

$r = 0.915$ $\quad r\% = 100r = 91.5\%$

For each set of mathematical model facts answer the related questions below it

Sketch a quick graph of the given model label the first three points and the horizontal asymptote



Mathematical Facts

You are given an initial amount of 5. You have a change rate of 375%. This is a growth model

15. Build the exponential change model
$y = 5(4.75)^x$

16. State the change rate as a decimal 3.75

17. State the change factor 4.75

18. Determine when your model will reach an amount of 50
    Round to three decimal places

$x \approx 1.478$

$r\% = 375\%$

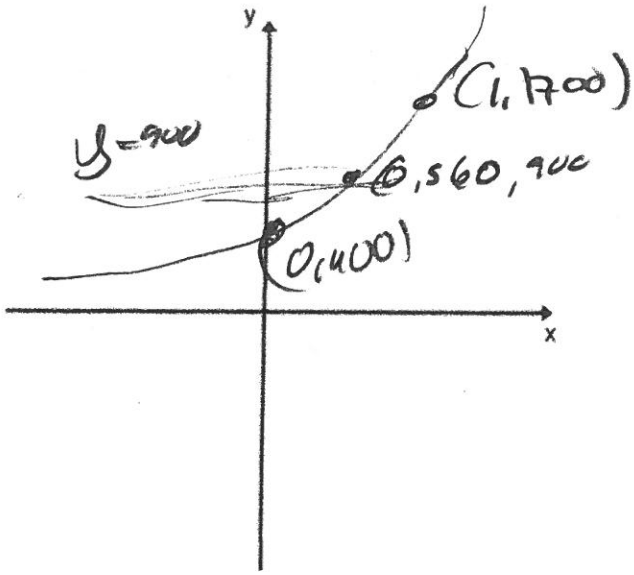
$\boxed{r = \frac{375}{100} = 3.75}$

$b = 1 + r$
$= 1 + 3.75$
$\boxed{b = 4.75}$

Name_____Formative Assessments basics of Exponential change model hour_____

For each set of mathematical model facts answer the related questions below it

Sketch a quick graph of the given model label the first three points and the horizontal asymptote



Mathematical Facts

You are given an initial amount of 400. You have a change factor of 4.25

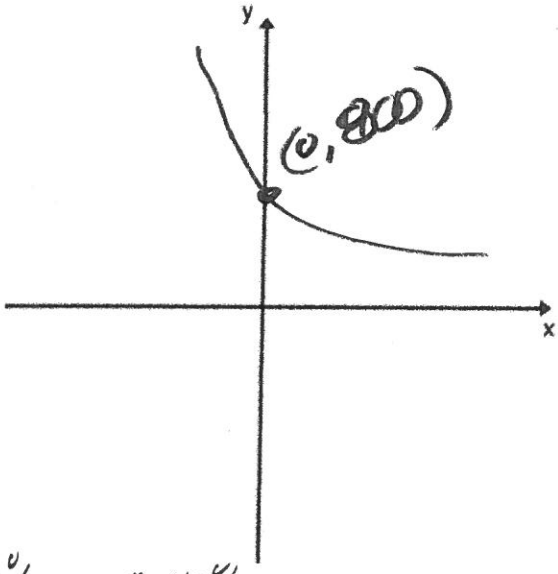
1. Build the exponential change model
   $y = 400(4.25)^x$
2. State the change rate as a decimal 3.25
3. State the change rate as a percentage 325%
4. This is exponential _____ model
   a. Growth
   b. Decay
   c. Neither
5. Determine when your model will reach an amount of 900 $x = 0.560$
   Round to three decimal places

$b = 4.25$ $r = 4.25 - 1$ $r\% = 100r = 100(3.25)$

$r = 3.25$ $= 325\%$

For each set of mathematical model facts answer the related questions below it

Sketch a quick graph of the given model label the first three points and the horizontal asymptote



Mathematical Facts

You are given an initial amount of 800. You have a change rate of 0.14%. This is a decay model

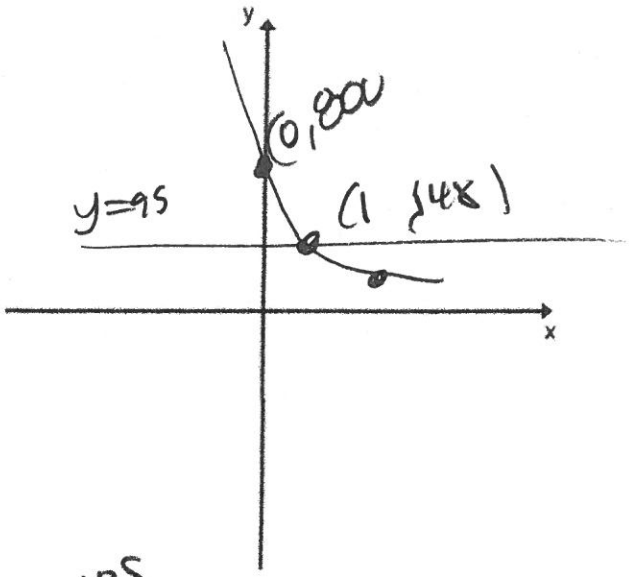
6. Build the exponential change model
   $y = 800(0.9986)^x$
7. State the change rate as a decimal 0.0014
8. State the change factor 0.9986
9. Determine when your model will reach an amount of 550
   Round to three decimal places

$r\% = 0.14\%$ Decay $1 - 0.0014$ $x \approx 267.451$

$r = \frac{0.14}{100}$ 0.9986

$r = 0.0014$

Sketch a quick graph of the given model label the first three points and the horizontal asymptote



$b = 0.185$

$r = 1 - b = 1 - 0.185$

Mathematical Facts

You are given an initial amount of 800. You have a change factor of 0.185

10. Build the exponential change model
$y = 800(0.185)^x$

11. State the change rate as a decimal 0.815

12. State the change rate as a percentage 81.5

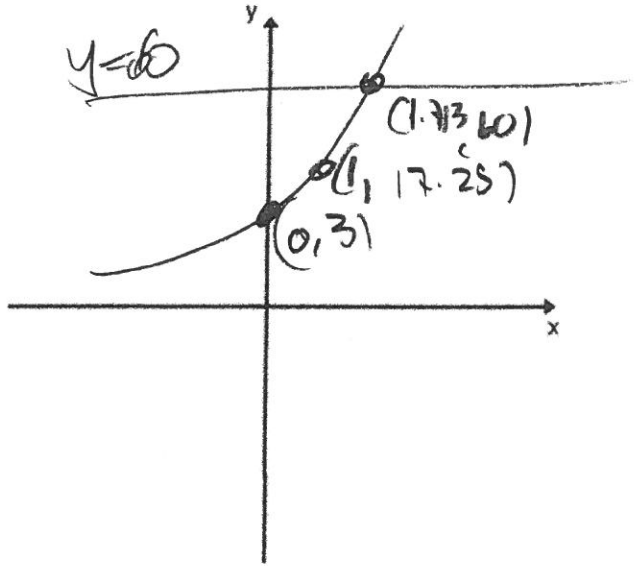
13. This is exponential _____ model
    a. Growth
    b. Decay
    c. Neither

14. Determine when your model will reach an amount of 95
Round to three decimal places
$x = 1.263$

$r = 0.815 \rightarrow r\% = 100(0.815) = 81.5\%$

For each set of mathematical model facts answer the related questions below it

Sketch a quick graph of the given model label the first three points and the horizontal asymptote



$r\% = 475\%$

Mathematical Facts

You are given an initial amount of 3. You have a change rate of 475%. This is a growth model

15. Build the exponential change model
$y = 3(5.75)^x$

16. State the change rate as a decimal 4.75

17. State the change factor 5.75

18. Determine when your model will reach an amount of 60
Round to three decimal places
$x = 1.713$

$r = \frac{475}{100}$

$\boxed{r = 4.75}$

$b = 1 + r$
$= 1 + 4.75 = 5.75$