

Unit 3 QUADRATICS

8. Expand and simplify

a) $(2x + 8)(x - 9)$

b) $-3(x + 2)^2 - 5$

9. Factor

a) $x^2 - 16$

b) $x^2 - 9x + 18$

c) $3x^2 - 9x - 30$

10. Graph $y = -3(x + 2)^2 + 5$

11. A ball is shot from the top of a building into the air with a speed of 130 m/s. Its height h , in metres, after t seconds is modeled by the relation $h = -5t^2 + 10t + 40$.

a) What was the initial height of the projectile?

b) After how many seconds does the ball hit the ground?

c) How long does it take for the ball to reach the maximum height?

d) What is the maximum height of the ball above the ground?

Unit 4 EXPONENTS

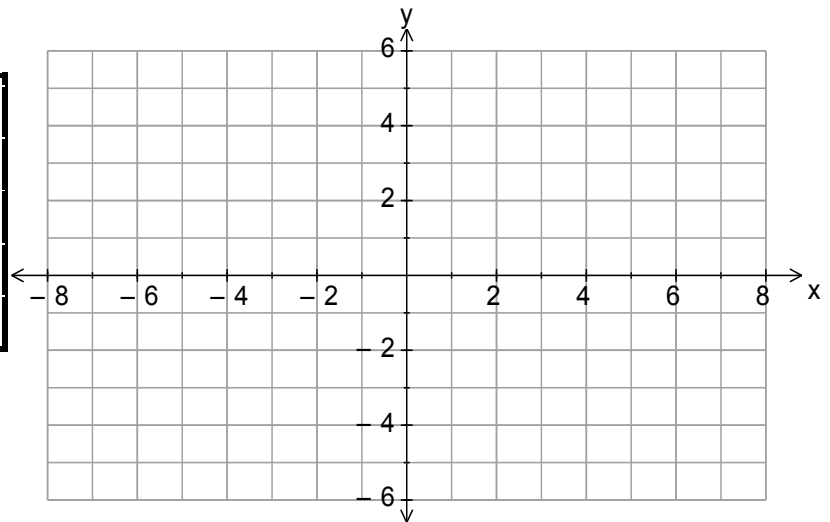
12. Graph the functions on the grid provided.

a) $y = 2(3)^x$

b) $y = \left(\frac{1}{3}\right)^x$

x	y

x	y



13. Evaluate the following expressions, simplifying to a single power first. No Decimals. Make all exponents positive

a. $(-7)^5 \times (-7)^{-5}$

b. $\frac{9^5}{9^7}$

c. $(5^{-2})^4$

14. A bacteria population is given by $P = 25(2)^{\frac{t}{5}}$ where t is the number of hours. Find each of the following:
- a) initial amount
 - b) growth rate
 - c) doubling time
 - d) population after 16 hours
 - e) population after 2 days
15. A colony of bacteria begins with a population of 1250 and decay at a rate of 23% every 9 hours. Write an equation to model the population of bacteria after "t" hours.

Unit 5 FINANCE

16. Joe needs to borrow \$5,600 that he plans to pay back by making one lump sum payment at the end of 5 years. Which of the following options is a better deal for Joe? Show all of your work.
 Option A: 5% compounded quarterly Option B: 5.5% compounded monthly
17. Amy has a loan of \$4,300 , due in 5 years, interest is 7.4% per year, compounded semi annually. If Amy decides to pay off her loan today how much should her creditors be willing to accept?
18. The gas tank of a car has a capacity of 75 L. The fuel efficiency rating of the car is 10.7 L/100 km.
- a) What distance can the car travel on one tank of gas?
 - b) How much gas would be used on a 375-km trip?
 - c) If gas costs \$1.17/L, determine the cost of fuel for this trip?

Unit 6 GEOMETRY

19. Using square dot paper, and the scale of one grid square = 10 cm, create a net for a rectangular prism with a length of 50 cm, width of 20 cm, and height of 40 cm. Draw an isometric view of the prism using isometric dot paper.

