

Chapter 3 – Powers and Exponents

LESSON 7: SOLVING PROBLEMS WITH EXPONENTS (PART 2)

Develop a Formula to Solve a Problem

Ex.1: A type of bacterium is known to triple every hour. There are 50 bacteria to start with. How many will there be after each number of hours?

a) 3

b) 5

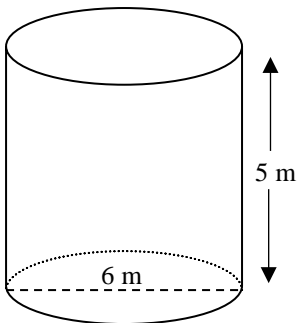
c) n

Ex.2: The combination for one type of bike lock has four numbers, from 0 to 9. The smallest combination is 0000, and the largest combination is 9999. How many number combinations are possible?

a) Express the answer as repeated multiplication and as a power.

b) Calculate the answer.

Ex.3: A cylinder has a diameter of 6 m and a height of 5 m. Calculate its surface area. Give your answer to the nearest hundredth of a square metre.



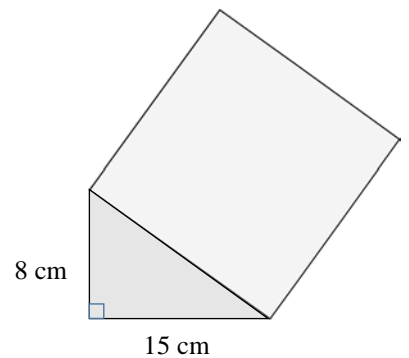
Ex.4: The cube of the sum of 4 and 2 is decreased by the square of the product of 5 and 3. Write an expression that models this statement. Then evaluate.

Ex.5: Write an expression with powers to determine the difference between the area of the large square of 7 cm and the area of the small square of 5 cm. What is the difference?

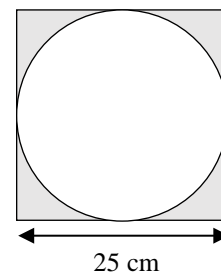
Chapter 3 Powers and Exponents – Worksheets

DAY 7: SOLVING PROBLEMS WITH EXPONENTS

1. What is the volume of a cube with a side length of 5 cm?
2. A colony of bacteria triples every hour. There are 30 bacteria now. How many will there be after each amount of time?
 - a) 1 h
 - b) 3 h
 - c) 12 h
 - d) n h
3. What is the surface area of a cube with a side length of 6 cm?
4. A right triangle has two shorter sides that measure 8 cm and 15 cm. What is the area of a square attached to the hypotenuse of the right triangle?



5. The diagram shows a circle inscribed in a square with a side length of 25 cm. What is the area of the shaded region? Give your answer to the nearest hundredth of a square centimetre.



6. A cylinder has a radius of 7 cm and a height of 12 cm. Calculate its surface area. Give your answer to the nearest hundredth of a square centimetre.

ANSWER KEY

Day 7: Solving Problems with Exponents

1. 125 cm^3
2. a) $30 \times 3^1 = 90$ b) $30 \times 3^3 = 810$ c) $30 \times 3^{12} = 15,943,230$ d) 30×3^n
3. 216 cm^2
4. 289 cm^2
5. 134.38 cm^2