

## Lesson 26 Practice Problems

1. Kiran plans to save \$200 per year. Bank A would pay 6% interest, and Bank B would pay 4% interest (both compounded annually). How many years will it take to save \$10,000 if he uses Bank A? Bank B?

2. Find the sum of the first 20 terms of each sequence:

a.  $1, \frac{2}{3}, \frac{4}{9}, \frac{8}{27}, \frac{16}{81}, \dots$

b.  $3, \frac{6}{3}, \frac{12}{9}, \frac{24}{27}, \frac{48}{81}, \dots$

c.  $4, 2, 1, \frac{1}{2}, \frac{1}{4}, \dots$

3. Diego wonders how much money he could save over 25 years if he puts \$150 a year into an account with 4% interest per year compounded annually. He calculates the following, but thinks he must have something wrong, since he ended up with a very small amount of money:

$$\text{total amount} = 150 \frac{1-0.04^{25}}{0.96} = 156.25$$

What did Diego forget in his calculation? How much should his total amount be? Explain or show your reasoning.

4. Which one of these equations is equivalent to  $8 = \frac{3+2x}{4+x}$  for  $x \neq -4$ ?

A.  $8 \cdot (4 + x) = 3 + 2x$

B.  $8 \cdot (3 + 2x) = 4 + x$

C.  $8 - (4 + x) = 3 + 2x$

D.  $\frac{4+x}{8} = 3 + 2x$

(From Unit 2, Lesson 23.)

5. Is  $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$  an identity? Explain or show your reasoning.

(From Unit 2, Lesson 24.)

6. Is  $a^4 + b^4 = (a + b)(a^3 - a^2b - ab^2 + b^3)$  an identity? Explain or show your reasoning.

(From Unit 2, Lesson 24.)

7. The formula for the sum  $s$  of the first  $n$  terms in a geometric sequence is given by  $s = a \left( \frac{1-r^n}{1-r} \right)$ , where  $a$  is the initial value and  $r$  is the common ratio.

A medicine is prescribed for a patient to take 700 mg every 12 hours for 5 days. After 12 hours, 4% of the medicine is still in the body. How much of the medicine is in the body after the last dose?

(From Unit 2, Lesson 25.)