

Warm Up

1. Which sequence below is arithmetic?

- (A) $\{3-2(1), 3-2(2), 3-2(3), 3-2(4), \dots\}$
- (B) $\{3-1, 3+1, 3-2, 3+2, \dots\}$
- (C) $\{3^1, 3^2, 3^3, 3^4, \dots\}$
- (D) $\{3+2, 3+2^2, 3+2^3, 3+2^4, \dots\}$

3. Which represents a geometric sequence?

- (A) $\left\{\frac{1}{3}, 1, \frac{5}{3}, \frac{7}{3}, \dots\right\}$
 - (B) $\left\{\frac{8}{7}, \frac{16}{3}, \frac{32}{9}, \frac{64}{27}, \dots\right\}$
 - (C) $\left\{\frac{2}{3}, \frac{8}{3}, 6, \frac{32}{3}, \dots\right\}$
 - (D) $\left\{\frac{2}{3}, \frac{16}{3}, 18, \frac{128}{3}, \dots\right\}$
- Handwritten notes for Q3:
 $S = \frac{a}{1-r}$
 $(-0.3)^2$
 $0.09 + (-0.3)^3$
 $\uparrow +0.3$

2. Given $t_n = \frac{1}{3}n - \frac{1}{6}$, what is t_3 ?

- (A) $\frac{5}{6}$
 - (B) $\frac{17}{6}$
 - (C) $\frac{19}{6}$
 - (D) $\frac{17}{2}$
- Handwritten calculation for Q2:
 $\frac{1}{3}(3) - \frac{1}{6}$
 $1 - \frac{1}{6}$

4. Evaluate: $\sum_{k=2}^{\infty} (-0.3)^k$

- A. -0.23
- B. 0.07
- C. 0.13
- D. 0.77

Handwritten calculation for Q4:
 $S = \frac{0.09}{1+0.3} = 0.069\dots$

5. If $x-2$, $x+4$, $5x+2$ are three consecutive terms in a geometric sequence, determine the numerical value(s) of the common ratio(s).

- A. -1
 B. $-4, -1$
 C. $-3, 3$
 D. $3, -1$

$$\frac{x+4}{x-2} = \frac{5x+2}{x+4}$$

$$(x+4)^2 = (5x+2)(x-2)$$

$$x=5$$

$$3, 9, 27 \quad (r=3) \quad x^2 + 8x + 16 = 5x^2 - 8x - 4$$

$$x=-1 \quad (r=-1)$$

$$-3, 3, -3, \dots$$

$$0 = 4x^2 - 16x - 20$$

$$0 = x^2 - 4x - 5$$

$$0 = (x-5)(x+1)$$

$$x=5, -1$$

6. In a geometric sequence, $t_4 = 108$ and $t_6 = 243$. Determine a possible first term.

A. $\frac{3}{2}$

B. $\frac{64}{3}$

C. 32

D. 48

$$\frac{ar^5}{ar^3} = \frac{243}{108}$$

$$\sqrt{r^2} = \sqrt{\frac{243}{108}}$$

$$r = 1.5$$

$$a(1.5)^3 = 108$$

$$a = \frac{108}{(1.5)^3} = 32$$

Sam gave his nephew, Norman, \$1 on his 1st birthday, \$2 on his 2nd birthday, \$4 on his 3rd birthday, and so on. That is, on each subsequent birthday, Sam gave Norman double the previous year's amount.

$$1 + 2 + 4 + 8 + \dots$$

7. How much money did Sam give Norman on his 15th birthday?

A. \$16 383

B. \$16 384

C. \$32 767

D. \$32 768

$$t_{15} = (1)(2)^{14}$$

8. In total, how much money did Sam give Norman up to and including his 21st birthday?

A. \$1 048 575

B. \$1 048 576

C. \$2 097 151

D. \$2 097 152

$$S_{21} = \frac{1(2^{21} - 1)}{2 - 1}$$
$$= 2^{21} - 1$$

Review Questions...

Test on
Tuesday

Page 66 - 68

#5, 7, 8, 11, 13, 17, 19, 20, 21

Page 70

#8, 9, 11, 12