Sequences and Series Review

1. In a geometric sequence $t_2 = 36$ and $t_5 = 62208$, find $t_{8.}$

2. In a geometric sequence $t_3 = 539$ and $t_6 = 184877$, find $t_{8.}$

3. In a geometric sequence $t_2 = -18$ and $t_6 = -1458$, find $t_{10.}$

4. Evaluate

$$\sum_{K=4}^{8} \left(\frac{1}{3}\right)^{k-9}$$

5. Evaluate

$$\sum_{K=3}^{10} \left(\frac{1}{5}\right)^{k-6}$$

6. Evaluate

$$\sum_{K=2}^{15} \left(\frac{1}{2}\right)^{k-8}$$

7. Find the sum of the first six terms. $64 + 32 + 16 + \cdots$

8. Find the sum of the first seven terms. $90 + 30 + 10 + \cdots$

9. Find the sum of the first eight terms. $5 + 20 + 80 + \cdots$

10. A car was purchased for $88000 and depreciates by 20% per year. What is the value of the car after 7 years?

11. A truck was purchased for $32000 and depreciates by 17% per year. What is the value of the car after 4 years?

12. Evaluate

$$\sum_{i=1}^{\infty} 3\left(\frac{1}{2}\right)^{i-1}$$

13. A ball is dropped from a building that is 50m tall. In each bounce the ball reaches a vertical height that is 30% of the previous vertical height. Determine the total vertical distance the ball will travel by the time it comes to rest.

14. Find the sum. $3 + 6 + 12 + \cdots + 384$

15. Write 2.3434343434… as a common fraction.

16. A baseball is dropped from the top of a building 20m above the ground. In each bounce the ball reaches a vertical height that is 40% of the previous vertical height. Determine the total distance that the ball has traveled when it has contacted the road for the seventh time.

17. A rubber ball is dropped from the top of a building 150m above the ground. In each bounce the ball reaches a vertical height that is 25% of the previous vertical height. Determine the total distance that the ball has traveled when it has contacted the road for the seventh time.

18. Solve for the missing variable and find the common ratio.

a) $\sqrt{x}, 3, 3\sqrt{x}$

b) $x - 3, x + 1, 4x - 2$

c) $x, 10, 25x$

d) $2, 2^x, 2^{11}$

e) $m + 2, m + 4, 2m + 11$

Answers

1. 10 7495 424	2. 9 058 973	3. -118 098
4. 363	5. 156.25	6. 127.996
7. 126	8. 134.938	9. 109 225
10. $18 454.94	11. $ 15 186.66	12. 6
13. 92.857 m	14. 765	15. $\frac{232}{99}$
16. 46.55744 m	17. 249.976 m	
18.a) $r = \frac{3}{\sqrt{3}}$	b) $r = 3 \; and \; r = \frac{-1}{2}$	c) $r = \pm 5$
d) $r = 2^5$	e) $r = \frac{1}{2} \; and \; r = 3$	