

Complete all questions on separate sheet unless otherwise specified. Attach this sheet to the front. (1 mark each unless specified)

1. Arrange the following numbers in descending order:

$$1\frac{3}{8}, -3\frac{1}{3}, 1\frac{15}{16}, -1\frac{10}{11}$$

2. Determine a fraction that falls between 2.3 and $2.\overline{3}$

3. Evaluate: $(-5.6) \div 2.0 - (-3.4) \times 1.7$

4. Mountain climbers must prepare for cold temperatures as they approach the top of a mountain. The air temperature drops 6°C for every 1000 m climbed. The height of Mount Waddington in British Columbia is 4016 m. If the temperature at the bottom of Mount Waddington is 13°C , what is the temperature, to the nearest degree, at the top of the mountain? (2 marks)

5. Calculate:

a) $2\frac{3}{7} - 4\frac{1}{5}$

b) $(-2\frac{2}{5}) \div (-3\frac{1}{3})$

6. What is the perimeter of a square with an area of 196 m^2 ? (2 marks)

7. Audrey's mother bought a large rectangular cake for Audrey's 13th birthday party. The cake was cut into 32 equal pieces to be shared among Audrey, her school friends, and her two younger brothers. Audrey ate $\frac{1}{16}$ of the cake, her friends ate $\frac{3}{4}$ of cake, and her two brothers together ate $\frac{1}{3}$ of the remaining pieces of cake. How many pieces were left over? (2 marks)

8. Write each expression as a single power

a) $3^4 \times 3^5$

c) $(5^2)^3$

b) $\frac{(-2)^4}{(-2)^2}$

d) $\frac{(2^3)(2^{-5})}{2^{-7}}$

9. Evaluate without a calculator:

a) $4(-3^0)$

c) $(4^2 - 2^3) + 3^3 \times 2^0$

b) 2^{-3}

10. Write an expression with a coefficient of 5, a base of -4 and an exponent of 3.
11. Two cubes have edge lengths of 4 cm and 6 cm, respectively. (2 marks)
- Determine an expression that represents the difference in volumes of the cubes and calculate the difference.
 - Determine an expression that represents the difference in the surface areas of the cubes and calculate the difference.
12. Describe the pattern in this series using exponents: 1, 4, 27, 256, ... What are the fifth and eighth numbers in the series? (3 marks)

KEY.

1. $1\frac{15}{16}, 1\frac{3}{8}, -1\frac{10}{11}, -3\frac{1}{3}$

2. $\frac{139}{60}$

3. 2.98

4. -11°C approx.

5. a. $-\frac{62}{35}$ or $-1\frac{27}{35}$

b. $\frac{18}{25}$

6. 56

7. 4 pieces of cake left

8a. 3^9

b. $(-2)^2$

c. 5^6

d. 2^4

9a. -4

b. $\frac{1}{8}$

c. 35

10. $5(-4)^3$

11. a. $6^3 - 4^3 = 152 \text{ cm}^3$

b. $6(6^2) - 6(4^2) = 120 \text{ cm}^2$

12. $1^1, 2^2, 3^3, 4^4, 5^5,$

$6^6, 7^7, 8^8$

$5^5 = \underline{3125}$

$8^8 = \underline{16777216}$