

## FORM 3

### CHAPTER 1

#### Summative Practice

##### Section A

$$1 \quad (2e^2)^3 \times e^{-2} \div e^{-7} = 2^3 e^{6-2-(-7)} = 8e^{11}$$

Answer: A

$$2 \quad \frac{q^3}{4p^3} = \frac{q^3 p^{-3}}{4}$$

Answer: D

$$3 \quad \frac{\sqrt{r} \times r^{\frac{3}{4}}}{r^{\frac{1}{4}}} = \frac{r^{\frac{1}{2}} \times r^{\frac{3}{4}}}{r^{\frac{1}{4}}} = r^{\frac{1}{2} + \frac{3}{4} - \frac{1}{4}} = r$$

Answer: A

$$4 \quad \left(\frac{4}{7}\right)^{-2} = \frac{4^{-2}}{7^{-2}} = \frac{1}{4^2} = \frac{1}{16} = \frac{49}{16} = 3\frac{1}{16}$$

Answer: D

$$5 \quad (3^9 \times 8)^{\frac{1}{3}} \div (k^2)^{\frac{1}{2}} = 3^{9 \times \frac{1}{3}} \times 8^{\frac{1}{3}} \div k^{2 \times \frac{1}{2}} = 3^3 \times 8^{\frac{1}{3}} \div k = \frac{27 \times 2}{k} = \frac{54}{k}$$

Answer: D

$$6 \quad \frac{1}{\sqrt[5]{h}} = \frac{1}{h^{\frac{1}{5}}} = h^{-\frac{1}{5}}$$

Answer: C

$$7 \quad \left[\frac{64m^3}{n^6}\right]^{\frac{1}{3}} \div m^2 n^3 = 64^{\frac{1}{3}} m^{\frac{3}{3} \times \frac{1}{3}} n^{-6 \times \frac{1}{3}} \div m^2 n^3 = 4m^{1-2} n^{-2-3} = 4m^{-1} n^{-5} = \frac{4}{mn^5}$$

Answer: B

$$8 \quad \left(\frac{1}{6}\right)^{-\frac{2}{3}} = \left(\frac{1}{36}\right)^{\frac{1}{3}} = \frac{1}{\left(\frac{1}{36}\right)^{\frac{1}{3}}}$$

$$= \left[\frac{1}{\left(\frac{1}{36}\right)}\right]^{\frac{1}{3}} = 36^{\frac{1}{3}} = \sqrt[3]{36}$$

Answer: C

##### Section B

$$1 \quad (a) \quad a^4 \times a^2 = a^{4+2} = a^6 \neq a^8$$

False

$$(b) \quad b^6 \div b^{-2} = b^{6-(-2)} = b^8$$

True

$$(c) \quad (p^2)^4 = p^{2 \times 4} = p^8$$

True

$$(d) \quad q^{\frac{2}{3}} = (q^2)^{\frac{1}{3}} = \sqrt[3]{q^2} \neq \sqrt{q^3}$$

False

$$2 \quad (a) \quad p^4 = p \times p \times p \times p$$

True

$$(b) \quad k^0 = 1 \text{ if } k \neq 0$$

True

$$(c) \quad 3h^{-5} = \frac{3}{h^5} = \frac{1}{3h^5}$$

False

$$(d) \quad \sqrt[4]{8} = (8)^{\frac{1}{4}} = (2^3)^{\frac{1}{4}} = 2^{\frac{3}{4}}$$

True

##### Section C

$$1 \quad (a) \quad \frac{a^2 b^4 \times a^3 b^{\frac{3}{2}}}{a^3 b^{\frac{3}{2}}} = a^{2+3-3} b^{4+\frac{3}{2}-\frac{3}{2}} = a^2 b^4$$

$$(b) \quad (i) \quad \left(\frac{2c^2}{d}\right)^5 \div 8c^5 d = \frac{2^5 c^{2 \times 5}}{d^5} \times \frac{1}{8c^5 d} = \frac{32c^{10}}{d^5} \times \frac{1}{8c^5 d} = \frac{32c^{10}}{8c^5 d^6} = \frac{4c^5}{d^6}$$

$$(ii) \quad \frac{(2a^2 b^{-3})^3 \times a^{\frac{5}{2}} b^4}{8a^{\frac{1}{2}} b^2} = \frac{8a^6 b^{-9} \times a^{\frac{5}{2}} b^4}{8a^{\frac{1}{2}} b^2} = a^{6+\frac{5}{2}-\frac{1}{2}} b^{-9+4-2} = a^8 b^{-7} = \frac{a^8}{b^7}$$