

KS3 – Powers & Standard Form

Section A – Squares & Cubes

Q1 (4 marks)

Work out.

a) 4^2

b) 7^2

c) 3^3

d) 5^3

Q2 (3 marks)

Work out.

a) 12^2

b) 15^2

c) 10^3

Q3 (3 marks)

Complete the missing numbers.

a) $\underline{\hspace{1cm}}^2 = 81$

b) $\underline{\hspace{1cm}}^2 = 144$

c) $\underline{\hspace{1cm}}^3 = 216$

Q4 (2 marks)

A square has side length 13 cm.

Work out the area of the square.

Challenge

Q5 (2 marks)

A cube has side length 6 cm.

Work out the volume of the cube.

Section B – Square Roots

Q6 (4 marks)

Work out.

a) $\sqrt{25}$

b) $\sqrt{64}$

c) $\sqrt{121}$

d) $\sqrt{196}$

Q7 (3 marks)

Complete the missing numbers.

a) $\sqrt{\quad} = 9$

b) $\sqrt{\quad} = 13$

c) $\sqrt{\quad} = 20$

Q8 (3 marks)

Work out.

a) $\sqrt{36} + \sqrt{49}$

b) $\sqrt{100} - \sqrt{16}$

c) $3 \times \sqrt{81}$

Q9 (2 marks)

A square has an area of 225 cm^2 .

Work out the length of one side.

Challenge

Q10 (2 marks)

Work out $\sqrt{324}$ without using a calculator.

Section C – Index Notation

Q11 (3 marks)

Write each expression using index notation.

a) $5 \times 5 \times 5$

b) $3 \times 3 \times 3 \times 3 \times 3$

c) $2 \times 2 \times 7 \times 7 \times 7$

Q12 (3 marks)

Write each expression as repeated multiplication.

a) 6^4

b) 3^5

c) $2^3 \times 5^2$

Q13 (3 marks)

Simplify.

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

b) $a^5 \times a^2$

c) $m^6 \times m^3$

Q14 (3 marks)

Simplify.

a) $y^7 \div y^3$

b) $p^9 \div p^4$

c) $t^6 \div t^2$

Q15 (3 marks)

Simplify.

a) $(x^2)^3$

b) $(a^3)^4$

c) $(m^5)^2$

Q16 (2 marks)

Work out.

a) 7^0

b) 12^0

Challenge

Q17 (3 marks)

Simplify fully.

a) $x^3 \times x^5 \div x^2$

b) $(y^3)^2 \div y^4$

c) $a^7 \div a^3 \times a^2$

Section D – Standard Form

Q18 (3 marks)

Write each number in standard form.

a) 4,000

b) 75,000

c) 3,600,000

Q19 (3 marks)

Write each number in standard form.

a) 0.006

b) 0.00042

c) 0.0000075

Q20 (3 marks)

Write each number as an ordinary number.

a) 3.2×10^4

b) 6.05×10^6

c) 8.4×10^{-3}

Q21 (3 marks)

Write each number as an ordinary number.

a) 7.1×10^{-5}

b) 9.03×10^3

c) 1.25×10^{-2}

Q22 (2 marks)

Write these numbers in ascending order.

3.5×10^4 , 7.2×10^3 , 4.1×10^5 , 9×10^2

Challenge

Q23 (3 marks)

Work out. Give each answer in standard form.

a) $(3 \times 10^4) \times (2 \times 10^3)$

b) $(8 \times 10^6) \div (4 \times 10^2)$

c) $(5 \times 10^3) \times (6 \times 10^{-2})$

Total: ____ / 65

Percentage: ____%