GRADE 7 MATHEMATICS

Exponents & Powers

Complete Printable Worksheet Pack

Includes 6 Practice Worksheets + 6 Answer Keys

Skills: Exponential Notation • Laws of Exponents • Zero & Negative Exponents • Scientific Notation • Roots • Applications

Level: Grade 7 / International Curriculum Friendly
Format: A4 • Print Ready

Worksheet 1 — Powers & Exponential Notation

Name: _____ Date: _____

1. Write $6 \times 6 \times 6 \times 6$ in exponential form.

2. Write 3^5 as a repeated multiplication.

3. Evaluate 2^6.

4. Evaluate 5^3.

5. Evaluate 10^4.

6. Write 81 as a power with base 3.

7. Write 64 as a power with base 2.

8. Which is greater: 4^3 or 3^4? Show their values.

9. Write $7^2 \times 7^3$ as a single power of 7.

10. Explain the meaning of the exponent in 9^4.

Show your working clearly. Use exponent laws where appropriate.

Answer Key — Worksheet 1

Check your method as well as your final answer.

1. 6^4

2. $3 \times 3 \times 3 \times 3 \times 3$

3. 64

4. 125

5. 10,000

6. 3^4

7. 2^6

8. $3^4 = 81$ is greater than $4^3 = 64$

9. 7^5

10. It means 9 is used as a factor 4 times.

Worksheet 2 — Laws of Exponents

Name: _____ Date: _____

1. Simplify: $2^3 \times 2^4$.

2. Simplify: $5^6 \div 5^2$.

3. Simplify: $7^2 \times 7^5$.

4. Simplify: $10^8 \div 10^3$.

5. Simplify: $(3^2)^4$.

6. Simplify: $(2^3)^3$.

7. Simplify: $4^5 \times 4^2 \div 4^3$.

8. Write $9^2 \times 9^3 \div 9^4$ as a single power.

9. Find x: $3^x \times 3^2 = 3^7$.

10. Find n: $5^9 \div 5^n = 5^4$.

Show your working clearly. Use exponent laws where appropriate.

Answer Key — Worksheet 2

Check your method as well as your final answer.

1. $2^7 = 128$
2. $5^4 = 625$
3. 7^7
4. 10^5
5. 3^8
6. 2^9
7. 4^4
8. $9^1 = 9$
9. $x = 5$
10. $n = 5$

Worksheet 3 — Zero, Negative & Scientific Notation

Name: _____ Date: _____

1. Evaluate 8^0.

2. Evaluate 15^0.

3. Write $1 \div 2^3$ using a negative exponent.

4. Evaluate 2^{-4}.

5. Write 0.00056 in scientific notation.

6. Write 7.2×10^5 as an ordinary number.

7. Write 4,300,000 in scientific notation.

8. Write 9.6×10^{-4} as an ordinary decimal.

9. Which is greater: 3.5×10^6 or 4.2×10^5? By how much?

10. A bacterium is 0.0000032 m long. Write its length in scientific notation.

Show your working clearly. Use exponent laws where appropriate.

Answer Key — Worksheet 3

Check your method as well as your final answer.

1. 1

2. 1

3. 2^{-3}

4. 1/16

5. 5.6×10^{-4}

6. 720,000

7. 4.3×10^{6}

8. 0.00096

9. 3.5×10^{6}; difference = 3,080,000

10. 3.2×10^{-6} m

Worksheet 4 — Powers, Roots & Number Sense

Name: _____ Date: _____

1. Find $\sqrt{49}$.

2. Find $\sqrt{144}$.

3. Find $\sqrt[3]{27}$.

4. Find $\sqrt[3]{125}$.

5. Which whole number squared gives 225?

6. Find the positive value of x if $x^2 = 196$.

7. Find x if $x^3 = 216$.

8. Between which two consecutive whole numbers does $\sqrt{70}$ lie?

9. Between which two consecutive whole numbers does $\sqrt[3]{100}$ lie?

10. A square has area 324 cm^2. Find its side length.

Show your working clearly. Use exponent laws where appropriate.

Answer Key — Worksheet 4

Check your method as well as your final answer.

1. 7
2. 12
3. 3
4. 5
5. 15
6. 14
7. 6
8. Between 8 and 9
9. Between 4 and 5
10. 18 cm

Worksheet 5 — Powers in Real Life & Problem Solving

Name: _____ Date: _____

1. A square has side 15 cm. Write its area using an exponent and calculate it.

2. A cube has side 4 cm. Write its volume using an exponent and calculate it.

3. A computer stores 2^{10} bytes in a small block. How many bytes is this?

4. A population doubles each year. If it starts at 500, what is the population after 5 doublings?

5. A game score is multiplied by 3 for each of four bonus levels. What is the total multiplier?

6. A square garden has area 625 m^2. Find its side length.

7. A cube has volume 1,000 cm^3. Find its side length.

8. A number is written as 4×10^6. What does this represent as an ordinary number?

9. The distance from Earth to a satellite is approximately 3.6×10^7 m. Write this in kilometres.

10. A science experiment measures 0.00000045 g of a substance. Write this in scientific notation.

Show your working clearly. Use exponent laws where appropriate.

Answer Key — Worksheet 5

Check your method as well as your final answer.

1. $15^2 = 225$ cm²

2. $4^3 = 64$ cm³

3. 1,024 bytes

4. 16,000

5. $3^4 = 81$ times

6. 25 m

7. 10 cm

8. 4,000,000

9. 36,000 km

10. 4.5×10^{-7} g

Worksheet 6 — Exponents & Powers Challenge

Name: _____ Date: _____

1. Simplify: $2^5 \times 2^3 \div 2^4$.

2. Simplify: $(5^2)^3 \div 5^4$.

3. Find x: $2^{(x+1)} = 32$.

4. Find n: $3^{(2n)} = 729$.

5. Write 64×16 as a single power of 2.

6. Which is greater: 2^{12} or 4^6? Explain.

7. A number is $3^4 \times 3^2$. Write it as a single power and calculate its value.

8. A square has area 2^{10} cm^2. Find its side length.

9. A cube has volume 2^{15} cm^3. Find its side length.

10. A number is written as 7.5×10^6. It is increased by 20%. Write the new value in scientific notation.

Show your working clearly. Use exponent laws where appropriate.

Answer Key — Worksheet 6

Check your method as well as your final answer.

1. $2^4 = 16$

2. $5^2 = 25$

3. $x = 4$

4. $n = 3$

5. 2^{10}

6. They are equal: $4^6 = (2^2)^6 = 2^{12}$

7. $3^6 = 729$

8. $2^5 = 32$ cm

9. $2^5 = 32$ cm

10. 9.0×10^6