



The National
Orthodox School
Shmaisani

Grade Eight CS

Chapter 1 Integers, powers and roots

Student Book

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Exercise 1A

1.

Rational: $-8, 0.7, \sqrt[3]{27}, 1007, \sqrt{81}, \frac{8}{11},$

$0.8, 2\frac{3}{5}, \sqrt[3]{-8}$

Irrational: $15.4\pi, -\sqrt{3}, \sqrt[3]{5}, \sqrt{10}$

Not: $\sqrt{-5}$

2. D

3.

a) $-2, 81, \sqrt{9}$

b) $0.3, \frac{2}{9}$

c) $3\pi, \sqrt{5}$

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- 4.
- a) irrational
 - b) rational or irrational
 - c) rational
5. a) False
- b) False
 - c) True
 - d) True
 - e) False

Pages 10+11

Exercise 1B

1. a, d
2. a) True
- b) False
 - c) True
 - d) False
 - e) True
 - f) True

3.

a) 7

b) 8

c) $59 - 49 = 10$

$64 - 49 = 15$

$10/15 \approx 0.7$ (to 1 d.p.)

$7 + 0.7 = 7.7$

7.

a) 2

b) 3

c) $10 - 8 = 2$

$27 - 8 = 19$

$2/19 \approx 0.1$ (to 1 d.p.)

$2 + 0.1 = 2.1$

12.

a) Area of the square = Length ²

$$\text{Length} = \sqrt{\text{Area of the square}}$$

$$\sqrt{16} = 4$$

$$\sqrt{25} = 5$$

$$17 - 16 = 1$$

$$25 - 16 = 9$$

$$1/9 \approx 0.1 \text{ (to 1 d.p.)}$$

$$4 + 0.1 = 4.1 \text{ cm} = 41 \text{ mm}$$

13.

a) Volume of the cube = Length ³

$$\text{Length} = \sqrt[3]{\text{Volume of the cube}}$$

$$\sqrt[3]{27} = 3$$

$$\sqrt[3]{64} = 4$$

$$50 - 27 = 23$$

$$64 - 27 = 37$$

$$23/37 \approx 0.6 \text{ (to 1 d.p.)}$$

$$3 + 0.6 = 3.6 \text{ cm} = 36 \text{ mm}$$

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Exercise 1C

1.

a) 4

b) 5-6

c) 4

2.

a) $\frac{1}{7}$

b) $\frac{1}{3}$

c) $\frac{1}{4}$

d) $\frac{1}{8}$

e) $\frac{1}{25}$

f) $\frac{1}{27}$

3.

a) 2^3

b) 2^1

c) 2^{-1}

d) 2^{-4}

e) 2^0

4.

a) 3^3

b) 3^{-2}

c) 3^{-1}

d) 3^1

e) 3^0

f) 3^{-4}

5.

-1

6.

a) False

b) False

c) False

d) True

e) True

f) False

7.

a) 6^{-1}

b) 2^{-1}

c) 20^{-1}

d) $100^{-1} = 10^{-2}$

e) $4^{-2} = 2^{-4}$

f) 5^{-3}

8.

a) $\frac{1}{25}$

b) $\frac{1}{512}$

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11.

$$10^{-3}$$

$$\frac{1}{10\ 000} = 10^{-4}$$

$$\frac{1}{100\ 000} = 10^{-5}$$

12. Leave your answer in positive index form.

a) $5^{-2} = \frac{1}{5^2}$

b) $4^{-9} = \frac{1}{4^9}$

c) $2^{-6} = \frac{1}{2^6}$

d) $9^{-3} = \frac{1}{9^3}$

e) $6^{-6} = \frac{1}{6^6}$

f) $12^{-20} = \frac{1}{12^{20}}$

g) $11^{-3} = \frac{1}{11^3}$

h) $3^{-8} = \frac{1}{3^8}$

i) $7^{-6} = \frac{1}{7^6}$

j) 2^4

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Exercise 1

8. Leave your answer in positive index form.

a) 5^7

b) 8^6

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

d) 4^{13}

e) $4^{-3} = \frac{1}{4^3}$

f) $6^{-5} = \frac{1}{6^5}$

g) $8^{-3} = \frac{1}{8^3}$

h) $9^{-12} = \frac{1}{9^{12}}$

i) 1

j) 6

k) 1

Homework Book

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2.

a) 2^{12}

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

c) 2^3

d) 10^3

e) $6y^2$

f) $5t^3x$

6.

a) 2

b) 4

c) -6

d) 5

e) 2

f) 3

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7. Write as a fraction in its simplest form.

a) $\frac{1}{125}$

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

c) $\frac{9}{1}$

d) $\frac{3}{1}$

e) $\frac{125}{8} = 15 \frac{5}{8}$

f) $\frac{16}{1}$

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