

## Form 1

## Chapter 3 : Squares, Square Roots, Cubes and Cube Roots

TEACHER'S NAME:

NAME:

CLASS:

### 3.1 SQUARES AND SQUARE ROOTS

#### Notes

- The square of a number is the product of the number multiplied by itself.  
Example  $2^2$  is  $2 \times 2$ .
- The square of any number is always positive
- A perfect square is a non-zero whole number produced by multiplying a number by itself.
- The square root of  $a^2 = \sqrt[2]{a \times a} = a$

#### A Determine whether each of the following is a perfect square or not.

Choose your answer.

i) 121	YES	NO	ii) 196	YES	NO
iii) 90	YES	NO	iv) 225	YES	NO

#### B Fill in the blanks.

a)	$11^2 = 121$ $\sqrt{121} = \sqrt{[ ] \times [ ]}$ $= [ ]$	b)	$(-30)^2 = 900$ $\sqrt{[ ]} = \sqrt{(-30) \times (-30)}$ $= [ ]$
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c)

$$49 = 7 \times 7$$

$$\sqrt{\boxed{\quad}} = \sqrt{7 \times 7}$$

$$= \boxed{\quad}$$

d)

$$\sqrt{225}$$

$$= \sqrt{\boxed{\quad} \times \boxed{\quad}}$$

$$= \boxed{\quad}$$

e)

$$\sqrt{100}$$

$$= \sqrt{\boxed{\quad} \times \boxed{\quad}}$$

$$= \boxed{\quad}$$

f)

$$\sqrt{0.16}$$

$$= \sqrt{\boxed{\quad} \times \boxed{\quad}}$$

$$= \boxed{\quad}$$

C Match the answers below.

$$(-0.6)^2$$

$$2.63$$

$$2.5^2$$

$$0.16$$

$$23.4^2$$

$$\frac{25}{4}$$

$$\left(\frac{3}{4}\right)^2$$

$$10$$

$$\left(-\frac{9}{23}\right)^2$$

$$0.36$$

$$\sqrt{0.16}$$

$$547.56$$

$$\sqrt{\frac{18}{32}}$$

$$0.4$$

$$\sqrt{6\frac{10}{11}}$$

$$\frac{9}{16}$$

$$\sqrt{100}$$

$$\frac{3}{4}$$

$$\sqrt{0.025}$$

$$\frac{81}{529}$$

**D Solve.**

i) The diagram on the side shows a chessboard. Calculate the area, in  $\text{cm}^2$  of the chessboard.



=  $\text{cm}^2$

ii) The area of a rectangular piece of paper is  $702.25 \text{ cm}^2$ . How many equal squares of length 5 cm can be cut out of the paper?

= squares

**3.2 CUBES AND CUBE ROOTS****Notes**

- The square of a number is a number is that the number is multiplied by itself twice.
- Example  $2^3$  is  $2 \times 2 \times 2$
- The square root of  $a^3 = \sqrt[3]{a \times a \times a} = a$

**E Fill in the blanks****a)**

$$\boxed{\quad} \times \boxed{\quad} \times \boxed{\quad}$$

$$= (-11)^3$$
$$= -1\ 331$$

**b)**

$$\boxed{\quad} \times \boxed{\quad} \times \boxed{\quad}$$

$$= 6^3$$
$$= 216$$

**c)**

$$(-0.5) \times (-0.5) \times (-0.5)$$

$$= \boxed{\quad}^3$$

$$= -0.125$$

**d)**

$$\boxed{\quad} \times \boxed{\quad} \times \boxed{\quad}$$

$$= 16.8^3$$
$$= 4\ 741.632$$

F Match the correct values of the cube and the cube root below.

$$(-3)^3$$

$$\frac{8}{125}$$

$$(0.4)^3$$

$$4.64$$

$$\left(\frac{2}{5}\right)^3$$

$$9.38$$

$$\left(2\frac{3}{4}\right)^3$$

$$-27$$

$$32^3$$

$$20\frac{51}{64}$$

$$\sqrt[3]{2\frac{10}{27}}$$

$$0.064$$

$$\sqrt[3]{0.05}$$

$$-0.68$$

$$\sqrt[3]{100}$$

$$32768$$

$$\sqrt[3]{-\frac{5}{16}}$$

$$\frac{4}{3}$$

$$\sqrt[3]{824}$$

$$0.37$$

**G Solve.**

**a** Find the value without using a calculator.

i)  $\sqrt{3} \times \sqrt{48}$

ii)

$$\sqrt{3 \times 48}$$

$$\sqrt{\boxed{\quad}}$$

$$= \boxed{\quad}$$

iii)  $\sqrt{2.25}$

$$\sqrt{\boxed{\quad} \times \boxed{\quad}}$$

$$= \boxed{\quad}$$

iv)  $\sqrt{4\frac{1}{2}} \times \sqrt{\frac{1}{2}}$

$$\sqrt{\frac{9}{2} \times \frac{1}{2}}$$

$$\sqrt{\boxed{\quad}}$$

$$\sqrt{\boxed{\quad} \times \boxed{\quad}}$$

$$= \boxed{\quad}$$

**b**

Find the value of  $\sqrt[3]{343} \times 16^{\frac{3}{2}}$

$$= \boxed{\quad}$$

c A goat pen belonging to Pak Ismail is rectangular in shape with an area of  $289 \text{ m}^2$ . Pak Ismail wants to fence the whole cage. Calculate the length, in m, of the fence required by Pak Ismail.

$$= \text{ m}$$

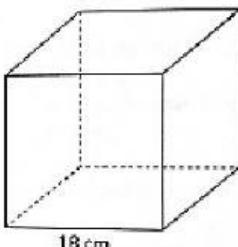
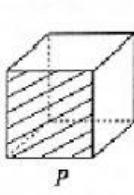
d i) Find the value of  $\sqrt{7} \times \sqrt{28}$ .

$$=$$

ii) Given  $m = 37^3 \times 27$ . Find the value of  $\sqrt[3]{m}$

$$=$$

e The diagram below shows two cubes of different sizes.



Given that the perimeter of the shaded area of cube P is 12 cm. Calculate the number of cubes P needed to fill cube Q.

$$=$$

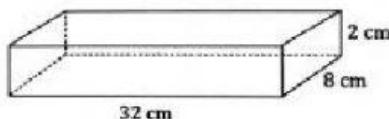
f The volume of a cube is  $343 \text{ cm}^3$ . Calculate the total surface area, in  $\text{cm}^2$ , of the cube.

$$=$$

g A cube -shaped container is filled with orange juice until full. The side length of the container is 9 cm. Calculate the volume, in  $\text{cm}^3$ , of the orange juice.

$$= \text{cm}^3$$

h The diagram below shows a cube and a cuboid.



Given that the volume of a cuboid is equal to the volume of a cube. Calculate

i) area, in  $\text{cm}^2$ , of the shaded region.

$$= \text{cm}^2$$

ii) perimeter, in cm of the shaded region.

$$= \text{cm}$$