



Rosary School \ Marj Elhamam

Name : ANSWER KEY
Subject: Worksheet (2) / unit (2)

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Grade : 6 ()

Number

2.1 Rules of Divisibility

Q1: Answer the Following questions and explain your answer.

- a. Is 236 divisible by 2? Yes, because last digit is even.
- b. Is 315 divisible by 5? Yes, because it ends with 5
- c. Is 432 divisible by 3? Yes, because the sum of the digits is divisible by 3
- d. Is 624 divisible by 4? Yes, last two digits divisible by 4
- e. Is 777 divisible by 9? No, the sum of the digits isn't divisible by 9
- f. Is 780 divisible by 10? Yes, it ends with 0
- g. Is 96 divisible by 2 and 3? Yes

Q2: Write a number divisible by 2, 3, and 5. 30

Q3: Which of these are divisible by 9? 54, 88, 81, 136, 108

Q4: A box of 120 apples must be shared equally among 10 students. Can it be divided evenly?

Yes, because $120 \div 10 = 12$ with no remainder.

Q5: A company prints 3,456 brochures. Can they pack them into boxes of 4 without leftovers?

Yes, 3456 is divisible by 4, so they can pack them into 4 boxes.

2.2 Factors, Multiples, and Primes

Q1: List all factors of 36. 1, 2, 3, 4, 6, 9, 12, 18, 36

Q2: List all factors of 40. 1, 2, 4, 5, 8, 10, 20, 40

Q3: List the first 5 multiples of 9. 9, 18, 27, 36, 45

Q4: Write all prime numbers between 10 and 30. 11, 13, 17, 19, 23, 29

Q5: Is 51 a prime number? Explain why.

No, 51 is not a prime number because it can be divided by 3 and 17

Q6: Work out the HCF of 12 and 16.

12: 1, 2, 3, 4, 6, 12

16: 1, 2, 4, 8, 16

HCF: 4

Q7: Work out the LCM of 8 and 10.

8: 8, 16, 24, 32, 40

10: 10, 20, 30, 40

LCM: 40

Q8: Work out the HCF and LCM of 9 and 27.

$$9: 1, 3, 9$$

$$27: 1, 3, 9, 27$$

$$\text{HCF} = 9.$$

$$9: 9, 18, 27, 36, 45$$

$$27: 27, 54, 81$$

$$\text{LCM} = 27.$$

Q9: Sarah has 20 red pens and 30 blue pens.

She wants to pack them in boxes equally.

What is the greatest number of boxes she can make?

$$20: 1, 2, 4, 5, 10, 20$$

$$30: 1, 2, 3, 5, 6, 10, 15, 30$$

$$\text{HCF} = 10$$

$$20 \div 10 = 2 \text{ red pens.}$$

$$30 \div 10 = 3 \text{ blue pens.}$$

Q10: A bus stops at a station every 15 minutes, and a train stops there every 20 minutes.

They both stop at the New York station together.

After how many minutes will be the first meeting of the bus and the train in that New York station.

To Find the

$$\underline{\text{LCM}} \rightarrow 15, 20$$

$$* 15: 15, 30, 45, \underline{60}, 75, \dots$$

$$* 30: 30, \underline{60}, 90, \dots$$

} they will meet

at the first

time = 60 min.

2.3 Positive and Negative Numbers

Q1: Arrange the following numbers in ascending order:

-4 5 -9 0 7 -2

-9, -4, -2, 0, 5, 7
Smallest

Q2: Work out.

a. $7 + -9 = -2$

f. $+6 \times +4 = 10$

b. $-12 - -5 = -7$

g. $-5 \times +3 = -15$

c. $-8 + 10 = 2$

h. $+7 \times -2 = -14$

d. $-9 - 3 = -12$

i. $-8 \times -5 = 40$

e. $9 - -4 = 13$

j. $-9 \times +6 = -54$

Q3: Compare: $-3 < 1$

Q4: Draw a ring around the smallest number.

-7 -10 -13 -3 0

Q5: A submarine is 60 m ⁽⁻⁾ below sea level.

It rises by 25 m.

What is its new depth?

$-60 + 25 = -35 \text{ m.}$

Q6: The temperature was -3°C at night and rose by 8°C during the day.
What is the daytime temperature?

$$-3 + 8 = 5^{\circ}\text{C}$$

Q7: An elevator starts at floor 0, goes down 4 floors, then up 9 floors.
What floor is it on?

$$0 - 4 = -4$$
$$-4 + 9 = 5$$

*The elevator is on Floor 5.

Q8: A freezer temperature is -12°C . If it increases by 6°C , what is the new temperature?

$$-12 + 6 = -6^{\circ}\text{C}$$

2.4 Squares and Square Roots

Q1: Write the first 10 square numbers.

1, 4, 9, 16, 25, 36, 49, 64, 81, 100

Q2: Work out.

a. $5^2 =$ 25

b. $0.8^2 =$ 0.64

c. $\sqrt{64} =$ 8

d. $\sqrt{49} =$ 7

e. $\sqrt{100} \times \sqrt{81} =$ $10 \times 9 = 90$

f. $\sqrt{121} =$ 11

g. $(\sqrt{36})^2 =$ $6^2 = 36$

Q3: A square garden has a side length of 12 m.

Find its area.

$$A = s^2$$

$$A = 12^2 = 144 \text{ m}^2$$

Q4: The area of a square is 36 cm².

Find the length of one side.

$$\rightarrow \sqrt{36} = 6 \text{ cm}$$

Q5: work out estimate:

a. $\sqrt{5} = \sqrt{4} < \sqrt{5} < \sqrt{9}$

$$\begin{array}{c} \text{XXXXX} \\ 2 \quad 2.5 \quad 3 \\ * \left[\begin{array}{cc} 2.1 & \\ 2.2 & 2.4 \\ 2.3 & \end{array} \right] \end{array}$$

b. $\sqrt{90} = \sqrt{81} < \sqrt{90} < \sqrt{100}$

$$* \left\{ \begin{array}{c} 9.1 \\ 9.2 \\ 9.3 \\ 9.4 \end{array} \right\}$$

$$9 < \sqrt{90} < 10$$

$$\begin{array}{c} \text{XXXXX} \\ 9 \quad 9.5 \quad 10 \end{array}$$

2.5 More Powers and Roots.

Work out.

a. $7^2 + 0.4^2 = 49 + 0.16 = 49.16$

b. $9^2 - 5^2 = 81 - 25 = 56$

c. $(4 + 3)^2 = 7^2 = 49$

$$d. \sqrt[3]{125} = \underline{5}$$

$$e. \sqrt[3]{-8} = \underline{-2}$$

$$f. 4 \times \sqrt[3]{1000} - 20 = \underline{4 \times 10 - 20} = 40 - 20 = \underline{20}$$

$$g. 4 \times \sqrt[3]{64} = \underline{4 \times 4} = 16$$

$$h. \frac{36}{4} - 15 = \underline{9 - 15} = -6$$

$$i. \frac{\sqrt{100}}{2} + 15 = \underline{\frac{10}{2} + 15} = 5 + 15 = 20$$

$$j. \sqrt[3]{729} = \underline{9}$$

$$k. 6 \times 2^3 - 20 = \underline{6 \times 8 - 20} = 48 - 20 = 28$$

$$l. 4^3 + 5^2 = \underline{64 + 25} = 89$$

$$m. 9 \times \sqrt[3]{8 \times 27} = \underline{9 \times 2 \times 3} = 18 \times 3 = 54$$

$$n. \frac{25}{\sqrt[3]{125}} - 2^2 = \underline{\frac{25}{5} - 4} = 5 - 4 = \underline{1}$$

2.6 calculations.

Q1: Write these calculations in **ascending** order:

$$\sqrt[3]{27} - 2, \sqrt{25} - \sqrt[3]{8}, \sqrt{16} + 5$$

$$3 - 2 = 1 \quad 5 - 2 = 3 \quad 4 + 5 = 9$$

$$\sqrt[3]{27} - 2, \sqrt{25} - \sqrt[3]{8}, \sqrt{16} + 5$$

Smallest

Q2: Write these calculations in **descending** order:

$$\sqrt{49} - \sqrt[3]{8}, \sqrt[3]{27} + 1, \sqrt{36} - 4$$

$$7 - 2 = 5 \quad 3 + 1 = 4 \quad 6 - 4 = 2$$

$$\sqrt{49} - \sqrt[3]{8}, \sqrt[3]{27} + 1, \sqrt{36} - 4$$

Largest

Q3: Work out

a. $5(9 - 3) = 5 \times 6 = 30$

e. $\frac{8+22}{13-8} = \frac{30}{5} = 6$

b. $(12 - 7)^2 = 5^2 = 25$

f. $(-3)^3 = -27$

c. $(3 + 4 \times 2)^2 = 11^2 = 121$
 $(3+8)^2$

g. $\sqrt{64} + 2 \times 6 = 8 + 12 = 20$

d. $(30 \div 5 - 2)^2 = 4^2 = 16$
 $(6-2)^2$

h. $(20 \div 5 + 7)^2 = 11^2 = 121$
 $(4+7)^2$

i. $\frac{\sqrt{12+4}}{4} = \frac{4}{4} = 1$

j. $\sqrt{70 + 3 \times 10} = \sqrt{100} = 10$
 $\sqrt{70+30}$

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