



Rosary School \ Marj El Hamam

Name: Answer Key

Date: / / 2025

Subject: Worksheet (1) / Unit (1)

Number

Grade: 7 (A, B, C, D, E)

1.1 Calculating with negative numbers

Q1: Work out.

a) $5 + (-3) = 5 - 3$
 $= 2$

b) $-8 + 12 = 4$

c) $-15 + 7 =$

$-15 + 7 = -8$

d) $-35 + (-30) = -65$

e) $16 \times (-9) = -144$

f) $-27 \times 4 = -108$

g) $-12 \times (-5) = 60$

h) $15 \times (-8) = -120$

i) $342 \div (-3) = -114$

j) $-154 \div 7 = -22$

k) $-45.18 \div (-9) = 5.02$

l) $72 \div (-12) = -6$

Q2: Substitute the values into each expression and work out its value.

a) $3x - 4$ when $x = -6$

$$= 3x - 4$$

$$= -18 - 4 = -22$$

b) $u + at$ when $u = 3, a = -9$ and $t = 6$

$$= 3 + -9 \times 6$$

$$= 3 + -54$$

$$= 3 - 54 = -51$$

c) $m(p - t)$ when $m = -3, p = 5$ and $t = -7$

$$= -3(5 - (-7))$$

$$= -3(12)$$

$$= -36$$

d) $a - (2ab + c)$ when $a = 8, b = -4$ and $c = 2$

$$= 8 - (2 \times 8 \times -4 + 2)$$

$$= 8 - (-64 + 2)$$

$$= 8 - (-62) = 70$$

Q3: Expand the brackets to work these out.

Check your answers using the order of operations.

a. $7 \times (-6 - 3)$

$$= 7 \times -6 - 7 \times 3$$

$$= -42 - 21$$

$$= -63$$

check

$$\left\{ \begin{array}{l} 7 \times (-6 - 3) \\ = 7 \times -9 \\ = -63 \end{array} \right.$$

b. $-2(-5 + 8)$

$$= -2 \times -5 + -2 \times 8$$

$$= 10 + -16$$

$$= 10 - 16$$

$$= -6$$

check

$$\left\{ \begin{array}{l} -2(-5 + 8) \\ = -2 \times 3 \\ = -6 \end{array} \right.$$

c. $3 \times (-4 - 5) + 13$

$$= 3 \times -4 - 3 \times 5 + 13$$

$$= -12 - 15 + 13$$

$$= -12 - 15 + 13$$

$$= -27 + 13$$

$$= -14$$

check

$$\left\{ \begin{array}{l} 3 \times (-4 - 5) + 13 \\ = 3 \times -9 + 13 \\ = -27 + 13 \\ = -14 \end{array} \right.$$

d. $-4(12 - 2) - 9$

$$= -4 \times 12 - -4 \times 2 - 9$$

$$= -48 + 8 - 9$$

$$= -48 + 8 - 9$$

$$= -40 - 9 = -49$$

check

$$\left\{ \begin{array}{l} -4(12 - 2) - 9 \\ = -4 \times 10 - 9 \\ = -40 - 9 \\ = -49 \end{array} \right.$$

Q4: a) Work out these calculations.

i. $(-2)^2 = -2 \times -2 = 4$

ii. $(-5)^2 = -5 \times -5 = 25$

iii. $(-10)^2 = -10 \times -10 = 100$

iv. $(-12)^2 = -12 \times -12 = 144$

b) Write the positive and negative square roots of these numbers.

i. $\sqrt{9} = 3$ and -3

ii. $\sqrt{16} = 4$ and -4

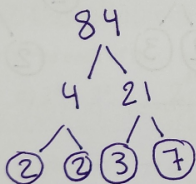
iii. $\sqrt{49} = 7$ and -7

iv. $\sqrt{196} = 14$ and -14

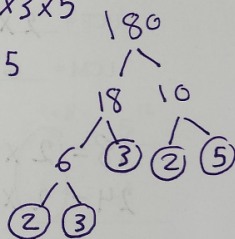
1.2 Prime factor decomposition

Q5: Write each number as a product of its prime factors.

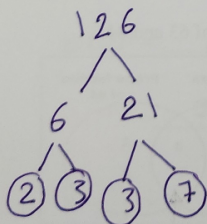
a) $84 = 2 \times 2 \times 3 \times 7 = 2^2 \times 3 \times 7$



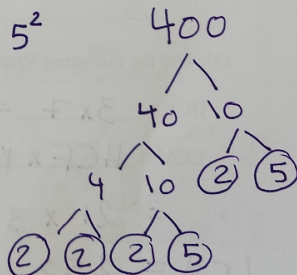
b) $180 = 2 \times 2 \times 3 \times 3 \times 5 = 2^2 \times 3^2 \times 5$



c) $126 = 2 \times 3 \times 3 \times 7 = 2 \times 3^2 \times 7$



d) $400 = 2 \times 2 \times 2 \times 2 \times 5 \times 5 = 2^4 \times 5^2$



Q6: Use prime factor decomposition to find the HCF and the LCM of each pair of numbers.

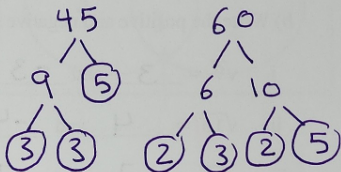
a) 45 and 60

$$\text{HCF} = 3 \times 5 = 15$$

$$\text{LCM} = 15 \times 2 \times 2 \times 3 = 180$$

$$45 = 3 \times 3 \times 5$$

$$60 = 2 \times 2 \times 3 \times 5$$



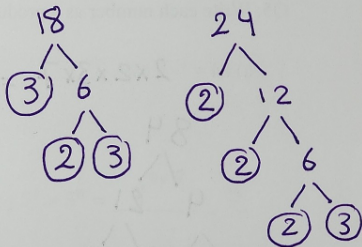
b) 18 and 24

$$\text{HCF} = 2 \times 3 = 6$$

$$\text{LCM} = 6 \times 2 \times 2 \times 3 = 72$$

$$18 = 2 \times 3 \times 3$$

$$24 = 2 \times 2 \times 2 \times 3$$



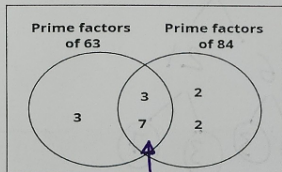
Q7: Use the following Venn diagram to find the HCF and the LCM of 63 and 84

$$\text{HCF} = 3 \times 7 = 21$$

$$\text{LCM} = \text{HCF} \times \text{remaining}$$

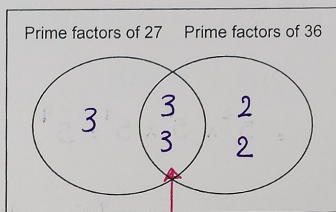
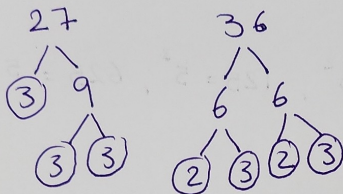
$$= 21 \times 3 \times 2 \times 2$$

$$\text{LCM} = 252$$



HCF

Q8: a) Write the prime factors of 27 and 36 in this Venn Diagram.



$$27 = 3 \times 3 \times 3$$

$$36 = 2 \times 2 \times 3 \times 3$$

b) Find the HCF and the LCM of 27 and 36.

$$\text{HCF} = 3 \times 3 = 9$$

$$\text{LCM} = \text{HCF} \times \text{Remaining}$$

$$= 9 \times 2 \times 2 \times 3$$

$$\text{LCM} = 108$$

1.3 Using indices

Q9. Write each of these as a single power.

$$a) 2^3 \times 2^2 = 2^{3+2} = 2^5$$

$$b) 5^4 \times 5^8 = 5^{4+8} = 5^{12}$$

$$c) 7^2 \times 7^5 \times 7^9 = 7^{2+5+9} = 7^{16}$$

$$d) 3^5 \div 3^2 = 3^{5-2} = 3^3$$

$$e) 6^7 \div 6^3 = 6^{7-3} = 6^4$$

$$f) \frac{8^9}{8^5} = 8^{9-5} = 8^4$$

$$g) (2^2)^3 = 2^{2 \times 3} = 2^6$$

$$h) (3^3)^2 = 3^{3 \times 2} = 3^6$$

$$i) (7^4)^2 = 7^{4 \times 2} = 7^8$$

$$j) \frac{2^3 \times 2^5}{2^4} = \frac{2^8}{2^4} = 2^{8-4} = 2^4$$

$$k) \frac{5^4}{5 \times 5^2} = \frac{5^4}{5^3} = 5^{4-3} = 5^1 = 5$$

$$l) \frac{10^6 \times 10^5}{10^4 \times 10^7} = \frac{10^{11}}{10^{11}} = 10^{11-11} = 10^0 = 1$$

Q10: Write each calculation as a single power.

a) $25 \times 125 \times 625$ $25 = 5^2$, $125 = 5^3$, $625 = 5^4$
 $= 5^2 \times 5^3 \times 5^4 = 5^9$

b) $\frac{7^9}{343} = \frac{7^9}{7^3} = 7^{9-3}$
 $= 7^6$

$343 = 7^3$
 $\begin{array}{c} 343 \\ \swarrow \downarrow \searrow \\ (7) \quad 49 \quad (7) \\ \quad \swarrow \searrow \\ \quad (7) \quad (7) \end{array}$

c) $\frac{36 \times 1296}{6^3}$

$36 = 6^2$, $1296 = 6^4$

So $\frac{6^2 \times 6^4}{6^3} = \frac{6^6}{6^3} = 6^3$

$$\begin{array}{r} 6 \overline{) 36} \\ \underline{6} \\ 6 \\ \underline{6} \\ 0 \end{array}$$

$$\begin{array}{r} 6 \overline{) 1296} \\ \underline{6} 00 \\ 6 00 \\ \underline{6} 00 \\ 36 \\ \underline{6} 00 \\ 0 \end{array}$$

1.4 Priority of operations

Q11: Make the calculation correct by putting in a set of brackets.

a) $(8 - 3) \times 2 + 5 = 15$

b) $(20 - 2^3) \div 4 = 3$

c) $120 - (1 + 3^2) \times 5 = 40$

d) $32 - 2 \times (3 + 4) = 18$

Q12. Work out.

a) $2 + 3^2 = 2 + 9$
 $= 11$

b) $\sqrt{16} + 5^2 = 4 + 25$
 $= 29$

c) $(6 + 2^2) \div 2 =$

$= (6 + 4) \div 2$
 $= 10 \div 2$
 $= 5$

d) $\sqrt{81} + (4^2 - 6) \div 2 =$

$= 9 + (16 - 6) \div 2$
 $= 9 + 10 \div 2$
 $= 9 + 5$
 $= 14$