Unit 1

Basic Computation

sample

Concept Review

1. Divisibility

(a) When the last 2 digits of a number are divisible by 4, then the number is divisible by 4.

(b) When a number is divisible by both 2 and 3, then the number is divisible by 6.

(c) When the last 3 digits of a number are divisible by 8, then the number is divisible by 8.

(d) When the sum of the digits of a number is divisible by 9, then the number is divisible by 9.

2. H.C.F. and L.C.M.

(a) When a number is multiplied by itself several times, the operation is called power.
For example, $3^4 = 3 \times 3 \times 3 \times 3$.

(b) Prime factorization is a number written as the product of all its prime factors.
For example, $432 = 2^4 \times 3^3$.

(c) The first common multiple of two or more numbers is called the least common multiple (L.C.M.) of the numbers.

For example, the L.C.M. of 5, 6 and 8 is 120.

(d) Among all the common factors of two or more numbers, the greatest one is called the highest common factor (H.C.F.) of the numbers.

For example, the H.C.F. of 16, 24 and 28 is 4.

3. Operation of Numbers

(a) Multiplication and division must be completed before addition and subtraction.

(b) If there are brackets in an expression, complete the parts within the brackets first.

Quick Test

Determine whether each of the following is true (T) or false (F).

1. 314 is divisible by 6. (T / F)

2. $4^3 = 3^4$ (T / F)

3. The L.C.M. of 3 numbers must be larger than all of them. (T / F)

4. $[5 - (3 + 1)] \times 2 = 2$ (T / F)

Fill in the Blanks

1. Write down all prime factors of 12: __________

2. Using index notation, express 20 as a product of prime factors: 20 = __________

3. The H.C.F. and L.C.M. of 10, 14 and 50 are __________ and __________ respectively.

4. $(-4)(-5)(7) = (\_\_\_\_\_\_\_\_)(\_\_\_\_\_\_\_\_)$

$= \_\_\_\_\_\_\_\_$

5. $\dfrac{(-6)(-3)}{(-9)} = \dfrac{\boxed{}}{\boxed{}}$

$= \_\_\_\_\_\_\_\_$

Exercise

Level 1

Evaluate each of the following expressions (**1 – 10**).

TSA **1.** $(3)(-2) - (-4)(-5)$

2. $-3 + (-2) - (-5)$

3. $(-2)(-4)(+3)$

4. $(+12)(+8) \div (-6)$

5. $6 - (-4)(-9)$

6. $12 - (-25) \div (5)$

TSA **7.** $\dfrac{(+7)(-4) - (+16)}{-11}$

8. $\dfrac{(-4) - (+1) - (-4)(+3)}{(-10)}$

9. $\left(-\dfrac{3}{8}\right)(-16) - (-10)$

10. $\dfrac{(35)(-2)}{(+7)} - (-5)(-5)$

Fill in the Blanks

1. In the following situations, are the values mentioned exact or estimated?

(a) There are about 250 000 trees in Hong Kong now. ________________

(b) A tree expert examined 15 trees yesterday. ________________

2. If a number is rounded down, the estimated value must be ____________ (greater/smaller) than or equal to the original value.

For HKDSE **3.** **(a)** Round up 315.4925 to the nearest hundred. ______________

(b) Round down 315.4925 to 1 decimal place. ______________

(c) Round off 315.4925 to 2 significant figures. ______________

(d) Round off 315.4925 to the nearest integer. ______________

Exercise

Level 1

Write down the number of significant figures of each of the following numbers (**1 – 6**).

1. 310 014

__________ significant figures

2. 340.08

__________ significant figures

3. 20.010

__________ significant figures

4. 0.080 31

__________ significant figures

5. –1234

__________ significant figures

6. –0.116

__________ significant figures

7. Complete the following table.

		Correct to		
		2 sig. fig.	3 sig. fig.	4 sig. fig.
(a)	1890			
(b)	2.081 16			
(c)	–0.085 391			

Level Up Assessment

25. One of the shelves of a warehouse is fully packed with bags of rice, it is known that this shelf has 9 rows, and each row has around 39 bags of rice. The weight of each bag of rice is about 8.2 kg.

(a) Estimate the total number of bags of rice on the shelf.

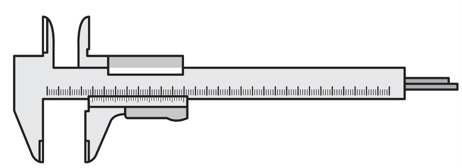
(b) If there are 78 identical shelves in this warehouse, and all of them are fully packed with rice, estimate the total number of bags of rice stored in the warehouse.

(c) Suppose each row of the shelf can support a weight of 350 kg only. If the number of bags of rice on each row of the shelf increases by 7, can the shelf support this weight? Explain your answer.

STEM Exploration

Vernier Scale

A vernier scale is a device that lets the user measure lengths of objects more accurately than a ruler. The smallest scale interval of a vernier scale is 0.1 mm or even smaller. It is commonly used in the laboratory for conducting experiments which require higher degree of accuracy.



The vernier scale can be used to measure the internal and the external diameters of small pipe. Visit the site through the given QR code. It demonstrates how to read the reading in the scale through interactive software.

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Glossary

approximation	近似	estimation strategy	估算策略
round down	下捨入	round off	捨入
round up	上捨入	significant figures	有效數字