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Road to HKDSE – Junior Secondary Mathematics Exercises (New Syllabus Edition) S1

1. Basic Computation

Name: _____

Class: _____

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Basic Computation

Revision Notes



1. H.C.F. (最大公因數) and L.C.M. (最小公倍數)

- (a) A **prime number** (質數) is a natural number which is greater than 1 and its factors are 1 and itself only. Otherwise, it is called a **composite number** (合成數).
- (b) **Prime factorization** (質因數分解) is a number written as the product of all its **prime factors** (質因數).
For example, $540 = 2 \times 2 \times 3 \times 3 \times 3 \times 5$.
- (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 4 and 6 is 12.
- (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 20 and 12 is 4.

2. Divisibility (整除性)

- (a) When the sum of the digits of a number is divisible by 3, then the number is divisible by 3.
- (b) When the last 2 digits of a number is divisible by 4, then the number is divisible by 4.
- (c) When the last digit of a number is 0 or 5, then the number is divisible by 5.
- (d) When a number is even and is divisible by 3, then the number is divisible by 6.
- (e) When the last 3 digits of a number is divisible by 8, then the number is divisible by 8.
- (f) When the sum of the digits of a number is divisible by 9, then the number is divisible by 9.

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.

Concept Check



Determine whether each of the following is correct or not.

- 2 is a prime number.
- For any two numbers, their H.C.F. must be less than their L.C.M.
- 32 can be written as a product of its prime factors.
- 25 733 is divisible by 9.
- If the last 2 digits of a number is 32, then the number is divisible by 4.
- $4 \div 2 \times 32 = 4 \div (2 \times 32)$

Conventional Questions



Level 0

- Find the H.C.F. of each of the following pairs of numbers.
 - $2 \times 2 \times 3$ and $2 \times 3 \times 5$
 - $2 \times 3 \times 3 \times 5$ and $2 \times 2 \times 3 \times 3 \times 3 \times 7$
- Find the L.C.M. of each of the following pairs of numbers.
 - $2 \times 3 \times 3$ and $3 \times 3 \times 5$
 - $2 \times 5 \times 5 \times 5$ and $2 \times 3 \times 3 \times 3 \times 11$
- In each of the following, put a tick into the box if the number is divisible by 4, 6, 8 or 9.

		Divisible by			
Number		4	6	8	9
(a)	328				
(b)	810				
(c)	1276				
(d)	3234				

Cross-topics Challenge



If A and B are prime numbers and their L.C.M. is 35, find the value of $\left(\frac{1}{A} + \frac{1}{B}\right) \times \frac{1}{2}$.

Common Exam Questions



1. If a number is divided by 5, 6 and 8 respectively, the remainders are all 2. Find the smallest possible value of the number.

2. The L.C.M. of 18 and a prime number P is 1602. Find the value of P .

Hint



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Conventional Questions



- (a) Round up 842.9351 to the nearest hundred.

(b) Round down 842.9351 to 2 decimal places.

(c) Round off 842.9351 to 3 significant figures.

(3 marks)
- In a room, the number of boys is 35% more than the number of girls. The sum of the numbers of boys and girls is 94. Find the number of boys.

(4 marks)
- A handbag is sold at a discount of 20% on its marked price. The selling price of the handbag is \$680.

(a) Find the marked price of the handbag.

(b) After selling the handbag, the profit percentage is 25%, find the cost of the handbag.

(4 marks)
- The marked price of a sofa is 25% above its cost. A profit of \$150 is made by selling the sofa at a discount of 10% on its marked price. Find the marked price of the sofa.

(5 marks)
- The price of a sport watch is \$200 more than a classic watch. The price of 2 sport watches and 5 classic watches is \$7400. Find the price of a sport watch.

(4 marks)

20. (a) Total income = $$(25 \times 120 + 5 \times 50)$$
 $= \$3250$
 Profit = $$(3250 - 2500)$$
 $= \underline{\$750}$

(b) Profit percentage = $\frac{\$750}{\$2500} \times 100\%$
 $= \underline{30\%}$

21. (a) Total cost = $$(60 + 140)$$
 $= \$200$
 Total income = $$(120 + 120)$$
 $= \$240$
 Profit = $$(240 - 200)$$
 $= \underline{\$40}$

(b) Profit percentage = $\frac{\$40}{\$200} \times 100\%$
 $= \underline{20\%}$

Level 2

22. (a) Income in last month = $$(5000 \times 200)$$
 $= \underline{\$1\,000\,000}$
 Income in this month
 $= \$[5000(1 - 10\%) \times 200(1 + 15\%)]$
 $= \underline{\$1\,035\,000}$

(b) Percentage change
 $= \frac{(\$1\,035\,000 - 1\,000\,000)}{\$1\,000\,000} \times 100\%$
 $= \underline{+3.5\%}$

23. Let $\$x$ be the cost of the jacket.

• Marked price = $\$x(1 + 60\%)$
 $= \$1.6x$

• Selling price = $\$1.6x(1 - 30\%)$
 $= \$1.12x$
 $1.12x - x = 30$
 $x = 250$

Marked price of the jacket = $\$1.6(250)$
 $= \underline{\$400}$

Analysis

Express the marked price and the selling price in terms of the cost.

24. Let x be the number of candies Windy has.

Then Paul has $(1 + 25\%)x = 1.25x$.
 $x + 1.25x = 144$
 $x = 64$

Windy has 64 candies and Paul has $1.25(64) = 80$ candies.

Their difference = $80 - 64$
 $= \underline{16}$

25. (a) Marked price = $\$250 \times (1 + 40\%)$
 $= \underline{\$350}$

(b) Total income = $$(140(350) + 60(350) \times (1 - 40\%))$$
 $= \underline{\$61\,600}$

(c) Profit percentage = $\frac{(\$61\,600 - 200 \times 250)}{\$200 \times 250} \times 100\%$
 $= \underline{23.2\%}$

26. (a) Price of 3 pairs of socks before discount
 $= \$60 \times 3$
 $= \$180$
 Selling price = $\$180 \times (1 - 10\%)$
 $= \underline{\$162}$

(b) Price before discount
 $= $(120 + 150 + 130 + 190)$$
 $= \$590$
 Price Eric needs to pay
 $= \$590 \times (1 - 20\%)$
 $= \underline{\$472}$

(c) Price before discount
 $= $(120 + 150 + 130 + 190 + 60)$$
 $= \$650$
 Price Eric needs to pay
 $= \$650 \times (1 - 40\%)$
 $= \$390$
 $< \$472$
 It is agreed.

Multiple-choice Questions**Level 1**

1. Percentage increase
 $= \frac{(24 - 20)^\circ\text{C}}{20^\circ\text{C}} \times 100\%$
 $= 20\%$

The answer is C.

2. Weight of Fanny
 $= 72 \div (1 - 20\%) \text{ kg}$
 $= 90 \text{ kg}$

The answer is A.

3. Profit percentage
 $= \frac{(\$52 - 40)}{\$40} \times 100\%$
 $= 30\%$

The answer is C.

4. Profit percentage
 $= \frac{\$25}{\$(125 - 25)} \times 100\%$
 $= \underline{25\%}$

The answer is D.