

IH UFP Basic Math TEST 1	Arithmetic Paper 1	Time: 50 minutes
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ANSWER ALL QUESTIONS.

READ EACH QUESTION CAREFULLY. WRITE CLEARLY AND SHOW HOW YOU ARRIVED AT THE ANSWER. YOU MAY GET MARKS FOR METHOD EVEN IF YOUR ANSWER IS INCORRECT.

USE BLACK OR BLUE INK.

YOU MAY NOT USE ANY REFERENCE MATERIAL.

YOU MAY NOT USE A CALCULATOR IN THIS TEST.

*Excellent performance
Very well done
Diao Cai 2008*

(Q 1) Evaluate these math calculations without using a calculator: 3 MARKS

$\begin{array}{r} 152207 \\ \quad \quad \quad 7 \times \\ \hline 1065449 \end{array}$ ✓	$0.5 + 0.02 + 0.03 = 0.55$ ✓	$5000 + 300 + 10 + 7 = 5317$ ✓
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(Q 2) Complete the table below for Fraction Decimal and Percentages 3 MARKS

Fraction	Decimals	Percentages
$\frac{3}{4}$	0.75 ✓	75% ✓
$\frac{1}{100}$	0.01 ✓	1% ✓
$\frac{1}{20}$	0.05 ✓	5 ✓

(Q 3) Do these additions and subtractions below: 4 MARKS

$7 + (-3) = 4$ ✓	$(-5) + (-6) = -11$ ✓
$9 - (-3) = 12$ ✓	$(-14) - (-7) = -7$ ✓

(Q 4) Now do these multiplication and division below:		4 MARKS
$(-7) \times 3 = -21$ ✓	$(12) \div (-6) = -2$ ✓	
$(-2) \times (-8) = 16$ ✓	$(-28) \div (-14) = 2$ ✓	

(Q 5) Working from left to right evaluate the expression below:	4 MARKS
$3 + 5 \times 12 \div 2 - 12 \div 4 \times 2 - 1 = 26$ $= 3 + 60 \div 2 - 12 \div 4 \times 2 - 1$ $= 3 + 30 - 6 - 1$ $= 33 - 7 = 26$ ✓	

(Q 6) Evaluate this expression:	4 MARKS
$(10 + 5 \times 6) \div 2 - 12 \div 4 \times 2 - 1 = 13$ $= (10 + 30) \div 2 - 3 \times 2 - 1$ $= 40 \div 2 - 7$ $= 20 - 7 = 13$ ✓	

(Q 7) Nested brackets: Evaluate the expression below:	6 MARKS
$24 - 3(6 - 2[5 - 8]) + 8 = -4$ $= 24 - 3(6 - 2(-3)) + 8$ $= 24 - 3(6 + 6) + 8$ $= 24 - 36 + 8$ $= -12 + 8 = -4$ ✓	

(Q 8) Place < or > between each pair of numbers:

3 MARKS

2, -4: $2 > -4$ ✓ 5, -29: $5 > -29$ ✓ -14, 7: $-14 < 7$ ✓

-5, -6: $-5 > -6$ ✓ -98, -500: $-98 > -500$ ✓ -1000, 5000: $-1000 < 5000$ ✓

(Q 9) Solve these fractions:

8 MARKS

$$\frac{12}{1} \times \frac{8}{10}$$
$$= \frac{12}{1} \times \frac{8}{10}$$
$$= \frac{48}{5}$$

$$\frac{1}{2} + \frac{2}{3}$$
$$= \frac{3}{6} + \frac{4}{6}$$
$$= \frac{7}{6}$$

$$\frac{1}{2} \div \frac{3}{5}$$
$$= \frac{1}{2} \times \frac{5}{3}$$
$$= \frac{5}{6}$$

$$\frac{3}{8} - \frac{2}{3}$$
$$= \frac{9}{24} - \frac{16}{24}$$
$$= -\frac{7}{24}$$

(Q 10) Evaluate this:

6 MARKS

$$8(2[3+4] - 2[5+7])$$
$$= 8(2 \times 7 - 2 \times 12)$$
$$= 8(14 - 24)$$
$$= 8 \times (-10)$$
$$= -80$$

(Q 11) Show that the expression on the left does NOT equal the one on right:

6 MARKS

$$6 - (3 - 2) \neq (7 - 3) - 2$$
$$6 - 1 \neq 4 - 2$$
$$5 \neq 2$$

(Q 12) Find factors for these numbers:

3 MARKS

13

$$1 \times 13 = 13$$

1, 13

12

$$1 \times 12 = 12$$

$$2 \times 6 = 12$$

$$3 \times 4 = 12$$

$$4 \times 3 = 12$$

1, 2, 3, 4, 6, 12

11

$$1 \times 11 = 11$$

1, 11

(Q 13) What is a prime number? Give an example of a prime number

1 MARKS

Number is 100.

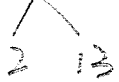
1	100
2	50
4	25
5	20

has two factors -
1 and the number itself

(Q 14) Find prime factors of these numbers:

4 MARKS

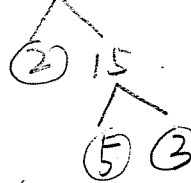
26



2, 13

$$2 \times 13 = 26$$

30



2, 3, 5

$$2 \times 15 = 30$$

1, 30

2, 15

3, 10

5, 6

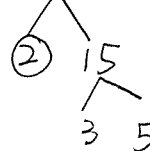
(Q 15a) Find Highest Common factor (HCF) of these numbers:

6 MARKS

26



30

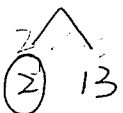


Highest: 2

(Q 15b) Find Lowest Common Multiple (LCM) of these numbers:

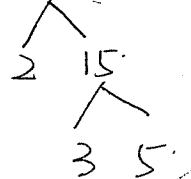
6 MARKS

26



$$15 \times 26 = 390$$

30



$$13 \times 30 = 390$$

Lowest: $2 \times 3 \times 5 \times 13 = 390$

(Q 16) Circle Coefficients and Variables in this expression:

2 MARKS

$$5x + 2y - 6z + 3x =$$

5, 2, 6, 3 = variables

x, y, z, x = coefficients

(Q 17) Collect like terms and simplify the expression below:

4 MARKS

$$5uv + 2xy - 6wz + 2uv - 3xy + 7wz$$

$$= 7uv - xy + wz \checkmark$$

(Q 18) Factorize this expressions below:

2 MARKS

$$bc + cd$$

$$= c(b+d) \checkmark$$

(Q 19) Factorize this expressions below:

4 MARKS

$$4pq - 8qr$$

$$= 4q(p-2r) \checkmark$$

(Q 20) Factorize this expressions below:

5 MARKS

$$9st - 6sw - 3sv$$

$$= 3s(3t - 2w - v) \checkmark$$

(Q 21) Expand bracket in the expression below:

2 MARKS

$$4x(y - 2z)$$
$$= 4xy - 8xz$$

(Q 22) Simplify expression below to its simplest form:

10 MARKS

$$\frac{y+x}{9x} - \frac{y-x}{3x}$$
$$= \frac{y+x}{9x} - \frac{3(y-x)}{9x}$$
$$= \frac{y+x-3y+3x}{9x}$$
$$= \frac{4x-2y}{9x} = \frac{4x}{9x} - \frac{2y}{9x} = \frac{4}{9} - \frac{2y}{9x}$$
$$= \frac{2}{9} \left(2 - \frac{y}{x} \right)$$

(Q 23) Evaluate the expression with nested brackets:

8 MARKS

$$6(a - [4 - 5(b - 2a)])$$

$$= 6(a - [4 - 5b + 10a])$$

$$= 6(a - 4 + 5b - 10a)$$

$$= 6(5b - 9a - 4)$$

$$= 30b - 54a - 24$$

(Q 24) Simplify expression below to its simplest form:

10 MARKS

$$\begin{aligned} & \frac{3a-4}{5b} + \frac{4a+3}{10b} \\ &= \frac{2(3a-4)}{10b} + \frac{4a+3}{10b} \checkmark \\ &= \frac{6a-8}{10b} + \frac{4a+3}{10b} \\ &= \frac{6a-8+4a+3}{10b} \checkmark \\ &= \frac{10a-5}{10b} = \frac{10a}{10b} - \frac{5}{10b} \\ &= \frac{a}{b} - \frac{1}{2}b \\ &= \frac{1}{b} \left(a - \frac{1}{2} \right) \end{aligned}$$

(Q 25) Evaluate these arithmetical calculations below:

3 MARKS

(a)	$+5 - +1 = 4$ ✓✓
(b)	$-9 - -7 = -2$ ✓✓
(c)	$-12 \div -3 = 4$ ✓✓
(d)	$-18 \div +6 = -3$ ✓✓
(e)	$-4 \times -4 = 16$ ✓✓
(f)	$-8 \div -8 = 1$ ✓✓