

Career and Leadership Centre
City University of Hong Kong

Numerical Reasoning Test

Practice Exercise (Level One)

Level One Numerical Reasoning Exercise consists of three Tests.

Test 1 – 5 minutes to complete 25 questions

Test 2 – 25 minutes to complete 30 questions

Test 3 - 45 minutes to complete 35 questions

You need to be able to answer these fundamental questions correctly and also quickly. Some questions are multiple-choice, where you have to choose which is correct from one of the suggested answers. Others are short answer, where you have to write your answer in the box provided.

Do not turn over the page until you are ready to begin.

Level One - Test 1 (5 minutes to complete 25 questions)

1. 1 4 9 ? 25
(A) 15 (B) 16 (C) 17 (D) 18 (E) 19
2. $45/9 = 12 - ?$
(A) 5 (B) 6 (C) 7 (D) 8 (E) 9
3. 729 ? 81 27 9
(A) 334 (B) 286 (C) 180 (D) 243 (E) 450
4. $1/4$ is less than the ratio of 1:3
(A) True (B) False
5. Which of the suggested answers has two numbers that are both whole number multiples of 4?
(A) 16, 18, 12 (B) 7, 11, 13 (C) 21, 22, 24
6. What number do you get if you divide 18 by 6 and then multiply the answer by 4?
(A) 9 (B) 12 (C) 16 (D) 18 (E) 27
7. What number do you start with if you multiply it by 5 then double it and get the answer 200?
(A) 15 (B) 5 (C) 10 (D) 20 (E) 25
8. 80 centimetres is equal to how many millimetres?
(A) 80 (B) 120 (C) 800 (D) 6400 (E) 8000
9. If the square has an area of 25m^2 what is the length of its sides?
(A) 2m (B) 3m (C) 5m (D) 10m (E) 100m
10. What is 500 more than 20,696?
(A) 20,196 (B) 21,196 (C) 25,696
11. What is the highest place value in the number 105,309?
(A) Hundred Thousands (B) Ten Thousands (C) Thousands (D) Tenths (E) Ones
12. Which of the following divides exactly by 9?
(A) 19 (B) 64 (C) 98 (D) 108 (E) 84
13. $81 \div 27 = 9 \div 3 = 1 \div ?$
(A) 0 (B) $1/2$ (C) 1 (D) $1/3$ (E) $1/6$

14. Which of the following number can be divided exactly with both 4 and 3?
(A) 15 (B) 16 (C) 21 (D) 32 (E) 36
15. The fraction $\frac{3}{4}$ is equivalent to what percentage?
(A) 12% (B) 30% (C) 40% (D) 75% (E) 80%
16. Change $\frac{3}{25}$ into a percentage
(A) 1.5% (B) 3% (C) 12% (D) 20% (E) 25%
17. Which is the smallest?
(A) $\frac{2}{8}$ (B) 0.25 (C) $\frac{1}{5}$ (D) 15% (E) $\frac{10}{40}$
18. Increase 400 by 40%
(A) 160 (B) 440 (C) 560 (D) 1600 (E) 16000
19. Which number is closest to 1?
(A) 0.12 (B) 0.91 (C) 0.80 (D) 1.01 (E) 1.41
20. What is 30% of 1200?
(A) 120 (B) 150 (C) 300 (D) 360 (E) 420
21. If $\frac{6}{8}$ is equivalent to $\frac{?}{32}$. What is the value of the unknown numerator?
(A) 6 (B) 12 (C) 14 (D) 24 (E) 26
22. Which is the larger number?
(A) 0.3 (B) $\frac{3}{12}$ (C) 30% (D) $\frac{9}{27}$
23. What number do you get if you divide 64 by 8 and then multiply the answer by 5?
(A) 8 (B) 30 (C) 40 (D) 50 (E) 60
24. What is 12.5% expressed as a fraction?
(A) $\frac{1}{2}$ (B) $\frac{2}{5}$ (C) $\frac{5}{12}$ (D) $\frac{1}{4}$ (E) $\frac{1}{8}$
25. Multiply 0.025 by ten thousand
(A) 2.5 (B) 25 (C) 50 (D) 250 (E) 2,500

-- End of Test --

SCORES

Grade A = 25

Grade C = 19-21

Grade E = 11-15

Grade B = 22-24

Grade D = 16-18

Grade F = Under 10

Level One - Test 2 (25 minutes to complete 30 questions)

1. $\frac{1}{2}$ 1 2 4 8 ?
(A) 12 (B) 16 (C) 18 (D) 20 (E) 24
2. 10 25 12 30 14 ?
(A) 16 (B) 24 (C) 30 (D) 35 (E) 50
3. 50 40 100 90 150 ?
(A) 120 (B) 140 (C) 180 (D) 200 (E) 300
4. Which of the following is not a cubed number:
(A) 8 (B) 27 (C) 64 (D) 94 (E) 125
5. What number do you start with if you divide it by 4, halve it and then multiply it by 5 to get the figure 20?
(A) 24 (B) 26 (C) 28 (D) 32 (E) 40
6. The reciprocal value of 8 =
(A) 0.1 (B) 0.04 (C) 0.025 (D) 0.125 (E) 0.8
7. 3 6 9 15 ?
(A) 20 (B) 24 (C) 28 (D) 30 (E) 32
8. $\frac{12}{5}$ is greater than $\frac{8}{3}$?
(A) True (B) False (C) Cannot say
9. 1, 2, 3, 5, 6, 10, ?, 30
(A) 12 (B) 15 (C) 16 (D) 20 (E) 24
10. What is the distance travelled at 60km/h in 3 hours 45 minutes?
(A) 180 (B) 200 (C) 225 (D) 250 (E) 560
11. What is 8% of 60?
(A) 0.4 (B) 4.2 (C) 4.8 (D) 7.5 (E) 48
12. What distance is travelled in 2 minutes at 4 m/second?
(A) 8 (B) 120 (C) 200 (D) 240 (E) 480
13. How many ml are in $\frac{13}{20}$ of a litre?
(A) 130 (B) 260 (C) 450 (D) 650 (E) 690

14. ?, 56, 80, 116, 164
(A) 28 (B) 32 (C) 40 (D) 44 (E) 48
15. If 17 households were found to produce 85 bottles for recycling, how many bottles would you expect 200 households to produce?
(A) 850 (B) 1000 (C) 1445 (D) 1700 (E) 3400
16. What was the year seventeen years before 2001?
(A) 1982 (B) 1983 (C) 1984 (D) 1985 (E) 2008
17. Which has the highest value, $63-45$, 2^4 , 4^2 , 8×2 or $85 \div 5$?
(A) $63-45$ (B) 2^4 (C) 4^2 (D) 8×2 (E) $85 \div 5$
18. If $\frac{2}{9}$ is equivalent to $\frac{12}{?}$, what is the value of the unknown denominator?
(A) 18 (B) 27 (C) 45 (D) 54 (E) 72
19. What number do you start with if you multiply it by itself and then multiply the answer by 4 to get 144?
(A) 4 (B) 6 (C) 9 (D) 36 (E) 42
20. Which suggested answer correctly identifies the following sequence: 2, 3, 5, 7, 11, 13, 17
(A) The sequence of squared numbers
(B) The sequence of cubed numbers
(C) The sequence of prime numbers
21. 54, ?, 234, 342, 462
(A) 138 (B) 154 (C) 162 (D) 183 (E) 208
22. 0, 3, 2, 5, 4, ?
(A) 8 (B) 7 (C) 9 (D) 6 (E) 5
23. If 50 calls are made each hour and of these 3 results in a sale, how many hours would it take to achieve 57 sales?
(A) 1.5 (B) 2 (C) 12 (D) 19 (E) 21
24. Over a five-day period 600 people visited the Warwick Castle. $\frac{1}{3}$ attended on day one and $\frac{5}{12}$ attended on day two. How many attendees visited the Warwick Castle over the last three days of the five-day period?
(A) 120 (B) 150 (C) 200 (D) 250 (E) 400

25. If 70 out of 520 guests at a hotel were children and $\frac{4}{5}$ of the adult guests were men, how many women stayed at the hotel?
 (A) 90 (B) 104 (C) 120 (D) 220 (E) 360

26. What is the missing number?

1	12	2
3	36	6
4	42	2
5	55	5
7	78	?

27. If a van can hold 30 boxes and in each box there are 230 shoes, how many pairs does a fully loaded van contain?
 (A) 690 (B) 1380 (C) 3450 (D) 4250 (E) 6900

28. If the GDP (gross domestic product) per head of Brazil is £380, Japan £2190, Ethiopia £180, Germany £3640 and the UK £4260, what is the average GDP per head for the countries located in Europe?
 (A) £2130 (B) £2693 (C) £2760 (D) £3950 (E) £7900

29. Which of the numbers in the square is the odd one out and why?

16	28	14	44
24	52	48	8
40	4	64	36
12	32	56	20

30. 1, 8, 27, 64, ?
 (A) 72 (B) 81 (C) 101 (D) 125 (E) 138

-- End of Test --

SCORES

Grade A = 30

Grade C = 24-26

Grade E = 16-20

Grade B = 27-29

Grade D = 21-23

Grade F = Under 15

Level One - Test 3 (45 minutes to complete 35 questions)

1. To reach target a sales team must achieve on average 150 sales a month. At the end of the third quarter, 1,200 sales have been achieved. How many sales per month must they realise during the last quarter to reach target?
A. 200
B. 300
C. 400
D. 600
E. 1050
2. If a machine can produce 180 items per hour, how many could 2 machines produce in 25 minutes?
A. 50
B. 60
C. 75
D. 150
E. 240
3. A telesales team of 12 are expected to make 2,400 calls a day. In fact they manage 2,640 calls each day for a whole week. What is the percentage change between the daily target number of calls and the actual number achieved?
A. 5% increase
B. 10% decrease
C. 10% increase
D. 12% increase
E. 0%
4. What is the missing number? (Clue: Don't just look from left to right.)

5	38	61
6	24	98
10	15	?

- A. 158
- B. 124
- C. 112
- D. 160
- E. 143

5. 3, 10, 24, 52, ?

- A. 80
- B. 108
- C. 104
- D. 112
- E. 118

6. If you cycle at 18 km/hr how far can you travel in 40 minutes?

- A. 3
- B. 6
- C. 8
- D. 12
- E. 15

7. What is the missing number?

3	51	5
8	46	8
2	41	7
6	?	9

8. If a litre of a liquid product is made by mixing 3 liquids in the ratio of 4: 2: 1 and you need 35 litres of the product, how many litres of the first ingredient do you need?

- A. 5
- B. 10
- C. 18
- D. 25
- E. 20

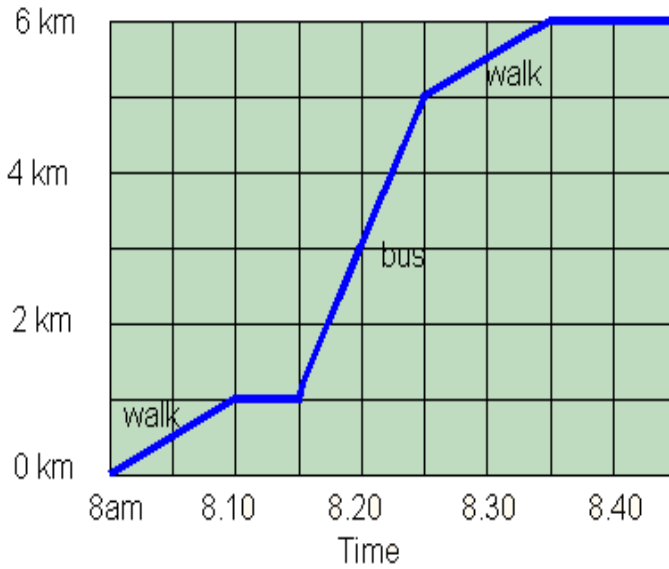
9. 3, 6, 9, 11, 20, 22, 42, ?

- A. 44
- B. 46
- C. 48
- D. 50
- E. 52

10. If the number of insurance claims per 2,000 policies was to increase from 40 to 60, what is the percentage increase in claims?

- A. 10%
- B. 20%
- C. 25%
- D. 50%
- E. 60%

Please refer to the following graph for Questions 11- 13.



A student walks to the bus stop to catch a bus to the university. He then walks from the bus stop at the university to the students union arriving there at 8.35 am.

11. How far does the student walk in total?

- A. 1km
- B. 2km
- C. 3km
- D. 4km
- E. 5km

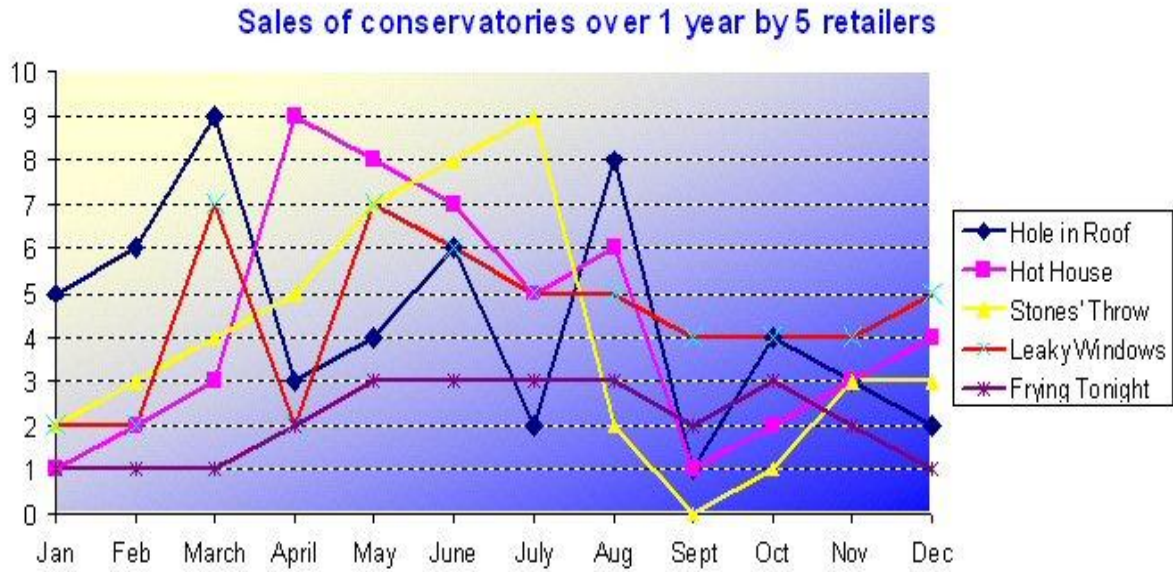
12. How far is he from the university students' union at 8:20 am?

- A. 1km
- B. 2km
- C. 3km
- D. 4km
- E. 5km

13. What is the average speed of the bus?

- A. 14kmph
- B. 24kmph
- C. 32kmph
- D. 40kmph
- E. 48kmph

Please refer to the following graph for Questions 14 - 17.

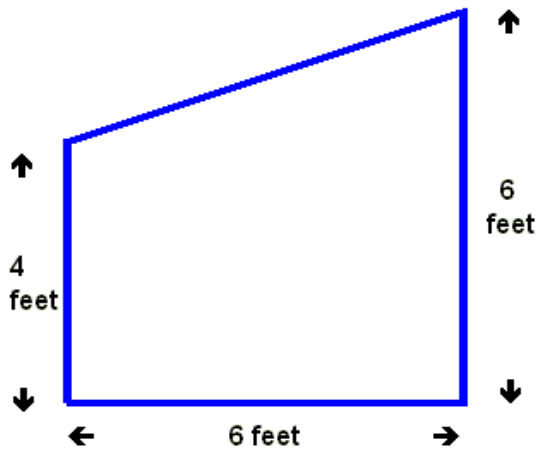


14. Which company's sales were most consistent throughout the year?
 - A. Hole in Roof
 - B. Hot House
 - C. Stone's Throw
 - D. Leaky Windows
 - E. Frying Tonight

15. In which month did the sales of Hole in Roof and Stones' Throw differ the most?
 - A. January
 - B. March
 - C. July
 - D. August
 - E. October

16. Which month gave the largest number of sales for all the companies combined?
 - A. April
 - B. May
 - C. June
 - D. July
 - E. August

17. What was the percentage increase in sales for Hot House between July and August?
 - A. 20
 - B. 30
 - C. 40
 - D. 50
 - E. 60



A shed has a side wall of the dimensions shown. Calculate the area of the wall in square feet.

18. A shed has a side wall of the dimensions shown. Calculate the area of the wall in square feet.

- A. 24
- B. 27
- C. 28
- D. 30
- E. 36

19. A car left Canterbury at 7.12 am and arrived in Birmingham, 180 miles distant at 10.57 am. What was its average speed in miles per hour?

- A. 42
- B. 44
- C. 46
- D. 48
- E. 50

20. What is the missing number?

2	7	13
31	25	20
38	43	?

- A. 27
- B. 36
- C. 46
- D. 49
- E. 53

21. An aircraft flies 930 miles in 75 minutes. How many miles does it fly in 4 hours 45 minutes assuming a constant speed?
- A. 3112
 - B. 3477
 - C. 3512
 - D. 3522
 - E. 3534
22. You get a wage increase of 4% plus an extra £10 per week. Your present wages are £150 per week. What will your new wage be?
- A. £166
 - B. £172
 - C. £180
 - D. £210
 - E. £220
23. A cube has a volume of 8 cubic metres. If each side is doubled in length what will its new volume be in cubic metres?
- A. 16
 - B. 24
 - C. 32
 - D. 48
 - E. 64
24. City B is 8 miles east of City A, City C is 6 miles north of City B. City D is 16 miles east of City C, and City E is 12 miles north of City D. What is the distance between City A to City E?
- A. 10 miles
 - B. 20 miles
 - C. 24 miles
 - D. 30 miles
 - E. 42 miles
25. 49, 7, 9, 3, 64, 8, 25, ?
- A. 9
 - B. 8
 - C. 5
 - D. 12
 - E. 36

Please refer to the following information for Questions 26- 28.

A taxi driver works 46 weeks of the year and gets an average of 70 customers per week which average 4 miles each at 90 pence per mile. His expenditure is as follows:

Car service/ Repair/ MOT/ Insurance	£1,250 per annum
Diesel fuel costs	6 pence per mile
Mortgage costs	£250 per month
Other expenditure- food/ electricity etc.	£125 per week

***£1 = 100 pence**

26. What is the total income of the taxi driver for the whole year?

- A. £11,592
- B. £12,192
- C. £12,692
- D. £12,992
- E. £13,192

27. What is his total expenditure over the year to the nearest pound?

- A. £9,353
- B. £9,953
- C. £10,453
- D. £10,773
- E. £11,523

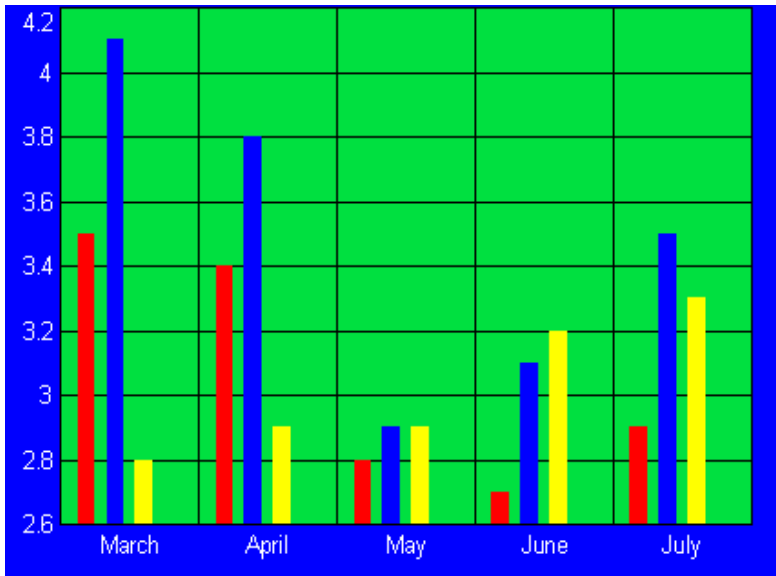
28. What is his average excess of income over expenditure per month to the nearest pound?

- A. £6
- B. £16
- C. £36
- D. £69
- E. £76

29. A driver drives 8 km South then 6 km W. and 2 km S. again. She then drives 3 km E. to avoid a traffic jam before driving 6 km N. How many kilometres is she from her starting point?

- A. 4 km
- B. 5 km
- C. 6 km
- D. 7 km
- E. 8 km

Please refer to the following diagram for Questions 30- 32.



The graph to the left gives the number of computers sold each month (in thousands) by three different computer manufacturers. Manufacturer 1 (in red), Manufacturer 2 (in blue) and Manufacturer 3 (in yellow).

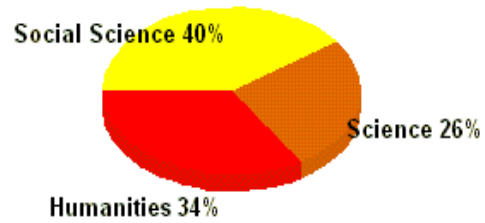
30. Which month showed the largest total decrease in PC sales over the previous month?
- A. March
 - B. April
 - C. May
 - D. June
 - E. July
31. What percentage of Manufacturer 2's sales was made in April (to the nearest percent)?
- A. 16%
 - B. 22%
 - C. 27%
 - D. 33%
 - E. 38%
32. If the average profit made on each PC sold by Manufacturer 3 over all 5 months was £78 what was the total profit on all sales in this period by that manufacturer?
- A. £650,400
 - B. £820,700
 - C. £980,300
 - D. £1,095,600
 - E. £1,177,800

Please refer to the following diagram for Questions 33- 35.

First Destinations of Students from the University of Poppleton

	2002	2003	2004
Total no. of grads	1700	1600	1500
% in employment	40	38	37
% in further study	33	36	39
% unemployment	4	6	8
% other	23	20	17

2004 GRADUATES BY FACULTY



33. What was the largest number of students in any year that went on to further study?
- A. 561
 - B. 576
 - C. 585
 - D. 592
 - E. Can't say
34. What was the decrease in the number of graduates in employment between 2002 and 2004?
- A. 125
 - B. 135
 - C. 140
 - D. 180
 - E. Can't say
35. In 2004 how many social science students were in employment after graduating?
- A. 260
 - B. 272
 - C. 284
 - D. 290
 - E. Can't say

- End -

SCORES

Grade A = 35

Grade C = 26-30

Grade E = 16-20

Grade B = 31-34

Grade D = 21-25

Grade F = Under 15