


Ho Cheung William Li, Siu Ling Polly Chan, Oi Kwan Joyce Chung, and Miu Ling Maureen Chui. (2010). Relationships among Mental Health, Self-esteem and


Vi-Nhuan Le, J. R. Lockwood, Brian M. Stecher, Laura S. Hamilton, and Jose Felipe Martinez. (2009). A Longitudinal Investigation of the Relationship between Teachers’ Self-Reports of Reform-Oriented Instruction and Mathematics and


SATB

Dr. K.K. Agarwal
PART – I
REASONING TEST

Instructions

The main aim of this test is to judge your reasoning power. For this 25 minutes time is fixed

Section – A

Example – I There are four letters group in the following questions. In every question three are similar in some way but the fourth is different. Find that out and write the number below that group on the answer sheet against that question

<table>
<thead>
<tr>
<th></th>
<th>ABCD</th>
<th>EFGH</th>
<th>IJKL</th>
<th>OPTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Here first three letters group are similar but fourth is different. Therefore the answer is (4) which is written against example 1 on answer sheet

Now solve the following questions similarly

1. BCBC WXWX PARS MNMN
   1  2  3  4

2. CCDE UUVW LLMN QRSS
   1  2  3  4

3. BCDD JKLL PQRR FFGH
   1  2  3  4

4. EXHM LMNO ABCD RSTU
   1  2  3  4

5. OPOR KAKR PARR MAMR
   1  2  3  4

6. WAWP WAWQ WAWR VAWS
   1  2  3  4

7. KLMN ABCD PQSR EFGH
   1  2  3  4

8. CDEF DEEG EEGH FGHI
   1  2  3  4
**Example – 2** In the following questions there are three words outside the brackets and four words within brackets. There is a relation between first two words outside the brackets. Similar relation exists between third word outside the bracket and any one of the word within brackets. Find out which is the word within brackets. Write down the number below the word against the question number on the answer sheet.

Holt Colour :: Diwali: (Worship Sweets Meet Lamp)

1    2    3    4

Here Holi is having same relation with colour as Diwali is having with lamp. Therefore the answer of this is (4) which is written against example 2 of the answer sheet. Now do the following questions similarly.

9. Army Soldier Crowd (Person Fair Heat Market)
   1    2    3    4

10. Wise Fool Sea (School Pandit Uneducated Teacher)
    1    2    3    4

11. Love Friend Anger (Anger Enemy Foreigner Dishonest)
    1    2    3    4

12. Soil Pitcher Gold (Goldsmith Side Ornament Valuable)
    1    2    3    4

13. Wood Light Silver (Valuable Shining Heavy White)
    1    2    3    4

14. Stealing Sin Donate (Rich Poor Donor Sacred)
    1    2    3    4

15. Poison Nector Death (Old Age Life Childhood youth)
    1    2    3    4

16. Mountain Stone Desert (Camel Date Sand Heat)
    1    2    3    4

**Example – 3** In the following questions, letters of English alphabets are written in a certain order. Find that order in each question and write the two letters next to that order against that question number on the answer sheet.

A B C D E F G H I (J K)

Here letters of English alphabets are written in order. Following this order are two letters JK which are written in the brackets.

Solve the following questions similarly and write two letters only following the order against the same question number on the answer sheet.

17. A C E G I
18. A B C X D E F X Y G H I X Y
19. A Z B Y C X D W
20. A B C B C D C D E
21. X Y Z A X Y Z B X Y Z C X Y
22. A B C C D E E F G G H I
Usha, Suman, Nunt, Sarita and Savita are five girls. Usha is taller than Sarita; Sarita is taller than Suman; Savita is taller than Usha but shorter than Munni. Now write the answer of the following questions against that question number on the answer sheet.

23. Who is tallest?
24. Who is shortest?
25. Which girl is medium size?
26. Who is second in height?
   Sheela is of 7 years old Savitri is of 11 years old
27. What will be the age of Sheela when the age of both together will be 30 years
28. What was the age of Sheela when the age of Savitri was double of the age of Sheela?
29. How much old was Savitri when the age of Sheela was 1/3 of the age of Savitri?
30. If 24 cm cloth after shrinking remains 22 cm then how much will be 36 cm cloth remain after shrinking?
31. In a hotel a mixture of 2 parts of cream and 3 parts of milk is served. How much milk is required to prepare 15 Kg mixture?
32. A rope is to be divided into 8 parts. First it is folded in two. How many times atleast it is to be cutted?

Example – 4  in the following questions some numbers are written in a special order. In every question following two numbers are to be written

1  2  3  4  5  6 (7  8)

Here we get the next number after adding 1 to the first. Therefore 7 and 8 are the following numbers which are written against example 4 on the answer sheet.

Now solve the following questions and write similarly the following two numbers on the answer sheet.

33.  2  4  6  8  10  12
34.  6  8  12  14  18  20
35.  20  23  22  25  24  27
36.  1  ½  ¼  1/8  1/16  1/32

Example – 5  1  3  4  6  7  9  11

Here number 6 breaks the order. Therefore it is written against example 5 on the answer sheet.

Now solve the following questions similarly.

37.  4  8  12  15  20  24
38.  2  4  8  16  24  64
39.  5  9  10  14  15  17
40.  1  2  9  27  81  243

Section – B
There are five words in each of the following questions. Out of these four words are some how alike to each other but one word is different to others. Find out the different element in each question and write down the number below that word against the question number on the answer sheet.

1. Wood coal Charcoal Steel Cole Lamp blace
   1 2 3 4 5
2. Hydrogen Nitrogen Calcium Helium Argon
   1 2 3 4 5
3. Copper Gold Silver Brass Diamond
   1 2 3 4 5
4. Water Ammonia Air Caustic Soda Nitre
   1 2 3 4 5

In the following questions there are four words in the brackets and three words outside the brackets. Only one word in the brackets is to be used for outside three words. Find out that word and write he number below it against the question number on the answer sheet

5. Carbonate Suphonate Nitrate (Metal Element Radical Isotopet)
   1 2 3 4
6. Sodium Potassium Calcium (Salt Element Compound Solid)
   1 2 3 4
7. Electron Proton Neutron (Nucleus Atom Compound Mixture)
   1 2 3 4
8. Ethane Methane Acetone (Organic Inorganic Alcohol Acid)
   1 2 3 4

Four answers of each of the following questions are given. Choose the correct answer (either of a, b, c and d) and write down against proper question number on the answer sheet

9. In big cities where factories are much, more fog is formed because-
   (a) Steam condenses on the smoke
   (b) Smoke looks like fog
   (c) Smoke changes into water drops
   (d) It happens because of much heat

10. Burning by steam is more troublesome than by boiling water because-
    (a) Temperature of steam is more than boiling water
    (b) Latent heat comes out when steam gets cold
    (c) Steam being in gaseous form penetrates body early
    (d) Steam has more power of burning in comparison to steam
11. Why a straight rod looks bent when it is immersed in water?
12. Why the water in summer remains cold in the water pot?

**PART – II**

**NUMERICAL ABILITY TEST**

**Instruction** (30 minutes)

The aim of this test is to judge your numerical ability. 30 minutes are allotted to complete this Section – A

Four answers of each of the following questions are given. Only one answer is correct. Write the correct answer (either of a, b, c and d) against proper question on answer sheet.

**Multiply**

1. \(3.50 \times 35\)  
   (a) 0.1225  
   (b) 122.5  
   (c) 12.25  
   (d) 1.225
2. \(0.015 \times 0.015\)  
   (a) 0.225  
   (b) 2.25  
   (c) 0.000225  
   (d) 22.500

**Divide**

3. \(3.75 \div 0.75\)  
   (a) 5  
   (b) 0.005  
   (c) 0.05  
   (d) 0.0005
4. \(0.68 \div 3.4\)  
   (a) 0.002  
   (b) 0.02  
   (c) 2  
   (d) 0.2

**Solve**

5. \(4 \frac{1}{2} + 5 \frac{3}{4}\)  
   (a) 32 1/8  
   (b) 23 1/8  
   (c) 21 1/8  
   (d) 24 1/8
6. \(1/2 - 1/4 \times 3/8 - 5/16\)  
   (a) 9/32  
   (b) 3/16  
   (c) 5/16  
   (d) 3/32

**Find Square-root of**

7. \(\sqrt{0.04}\)  
   (a) 0.02  
   (b) 0.2  
   (c) 2  
   (d) 4
8. \(\sqrt{16/18 \times 49/25}\)  
   (a) 3/32  
   (b) 3/32  
   (c) 3/32  
   (d) 3/32

9. 2.5 = 1% of?  
   (a) 5  
   (b) 8  
   (c) 80  
   (d) 125
10. 15 = 75% of?  
    (a) 20  
    (b) 10.25  
    (c) 10  
    (d) 20.5
11. \( \frac{4}{7} = \frac{?}{56} \)  
(a) 7  
(b) 4  
(c) 32  
(d) 16

12. \( \frac{5}{7} = \frac{25}{?} \)  
(a) 7  
(b) 35  
(c) 49  
(d) 5

Which one number can come on both places?

13. \( \frac{?}{4} = \frac{16}{?} \)  
(a) 64  
(b) 4  
(c) 8  
(d) 16

14. \( \frac{?}{49} = \frac{1}{?} \)  
(a) 14  
(b) 7  
(c) 21  
(d) 1

15. \( \frac{4}{?} = \frac{?}{100} \)  
(a) 40  
(b) 25  
(c) 200  
(d) 20

16. \( \frac{8}{?} = \frac{1}{12.5} \)  
(a) 10  
(b) 20  
(c) 64  
(d) 100

17. \( 3\sqrt{0.000216} \)  
(a) 0.06  
(b) 0.06  
(c) 0.006  
(d) 0.36

18. \( 3\sqrt{\frac{1}{8} \times \frac{27}{34}} \)  
(a) \( \frac{81}{512} \)  
(b) \( \frac{27}{512} \)  
(c) \( \frac{3}{8} \)  
(d) \( \frac{27}{64} \)

19. Purchase Price = Rs.50/-  
(a) 70  
(b) 120  
(c) 150  
(d) 60

Selling Price = ?  
Profit = 20 %  
(a) 175  
(b) 75  
(c) 200

Find the value of y

20. Selling Price = ?  
Loss = 25 %  
(a) 175  
(b) 75  
(c) 200

Purchased Price = ?  
(d) 150

21. \( 36 : 9 :: 12 : y \)  
(a) 27  
(b) 48  
(c) 3  
(d) 108

22. \( 8 : y :: y : 32 \)  
(a) 16  
(b) 12  
(c) 4  
(d) 64

23. Find the Value of y when average of the following no. = 60  
(a) 70  
(b) 59  
(c) 68  
(d) 79

nos. are – 40, 45, 52, y, 68, 72, 84

24. Find are area of circle, when (a) 7”  
(b) 154 sq. m  
(c) 22 sq. cm  
(d) 49 sq. cm

radius = 7 cm

Section – B

Solve the following questions and write their answer against proper question number on the answer sheet

1. Dilip swims 96 metre in 1 minute. How much time he will require to swim 16 metres ?

2. How much time a person will require to travel 9 Km. If he walks with a speed of 2 \( \frac{1}{4} \) Km per hour ?
3. A farmer buys 1 bullock and 6 cows for Rs.1,900/- if the value of a bullock is Rs.400/-, find the value of one cow?
4. Age of Sohan is 5 years and of Laxmi is 9 years. After how many years the total of their age will be 24 years?
5. Find the number whose double is half of 20
6. By what number should 5 be multiplied so that multiplicand is equal to the difference of 13 and 12
7. A farmer has 6 weeks grain for 40 hens. How long will it last for 60 hens?
8. If a person eats 0.4 Kg wheat in a day, in how many days will be eat 10 Kg wheat?
9. In a question of addition 435 has been added instead of 345 and answer is 1278. What was the correct answer?
10. Total age of Ram and Shyam is 50 years. Find the age of Ram if the age of Ram is 1 ½ times the age of Shyam?
11. Two farmers grow 110 Kg potatoes in a field. If there are distributed in the ration of 6:5, how much shall each get?
12. What shall be the interest of Rs.600/- in 3 years at the rate of 5%?
13. On how much principal amount shall be the interest of Rs.45/- at the rate of 5% for 3 years?
14. Area of a square field is 1600 sq. metres. Find the length of a wire to cover the four sides of the boundary once?
15. The floor of garage is 50’ x 40’. Find the height if the space of the garage is 16000 cu.ft.
16. A house is sold for Rs.400/- How much money is left with the owner after paying 2 ½ % of commission to the agent and spending Rs.100/- on other expenses?
17. Average of three numbers is 20 the average becomes 25 after adding a fourth number, what is that number?
18. 15 books are kept on one another. What shall be the number of book when counting from downwards it is fifth when counted from upwards?
19. If fifth part of a sum is Rs.12/- what shall be sixth part of half of that amount?
20. Find the monthly income of Ram, if 2/3 part of his monthly income is Rs.240.30
21. 10% loss is incurred on selling a steel almirah for Rs.270/- find its purchase price?
22. Mohan purchased a land for Rs.10000/- and sold it on 12% loss for how much be sold the land?
23. If 10% of a sum is Rs.135/- find that sum?
24. A person gives ½ of his money to his son and 1/3 to his daughter what part of the sum is left with him?
25. Mohan has same amount of 50 paise coins as Ram as 25 paise coins. If both have Rs.6/- together, how many 25 paise coins do Ram has?
26. If a man purchases a book for Rs.12/- and sells for Rs.15/- then find his percentage of profit?
27. A pillar is 1/6 under the surface and 24 ft. high above the surface, find the length of the pillar?
28. A shopkeeper adds 20% DAllda in pure ghee then how much will there be Dalda in 14 Kg ghee?
PART – III
SCIENTIFIC INFORMATION TEST

Instructions (20 minutes)

The aim of this test is to judge your scientific information knowledge. Time allowed for this is 20 minutes

Section – A

Four answers of each of the following questions are given. Out of these only one is correct. Write correct answer (either a, b, c or d) against proper question number on the answer sheet

1. What indicates abrupt fall of mercury level of the barometer?
   (a) Dry weather   (b) Cold weather
   (c) Rain   (d) Storm

2. What is measured by Wet and Dry Bulb Thermometer?
   (a) Heat of a body   (b) Temperature of a place
   (c) Relative Humidity of a place   (d) Specific heat of water

3. Where telescope is used?
   (a) in jet aero plane   (b) in submarine
   (c) in railway engine   (d) in study of spectrum

4. Who invented Maximum and Minimum Thermometer?
   (a) Newton   (b) Sicks
   (c) Dalton   (d) Archimedes

5. Modern Electric Bulb is filled with –
   (a) Air   (b) Hydrogen
   (c) Argon   (d) Vacuum

6. The instrument to see terrestrial bodies is –
   (a) Simple microscope   (b) Compound microscope
   (c) Astronomical Telescope   (d) Simple Telescope

7. An instrument with the help of which electric current can be known –
   (a) Cell   (b) Electric Bell
   (c) Electric current tester   (d) Telegraph

8. Temperature of a healthy person is –
   (a) 98.4°F   (b) 98.04°F
   (c) 37°C   (d) 100°F

9. First of all thunder was found by
   (a) Dr. Gilbert   (b) Thales
   (c) Volt   (d) Benjamin Franklin

10. Out of the following effects of electricity, “Telegraph” is based on
    (a) Chemical effect   (b) Magnetic effect
    (c) Thermal effect   (d) Physical effect

11. These days element of electric bulbs are made up of tungsten because
    (a) It is a good conductor meta   (b) Resistance of it is very high
    (c) Elements of it looks good   (d) It gives more light

12. Image of an object in the eyes having no defect is formed
    (a) inside eye retina   (b) on the eye retina
    (c) between eye lens and eye retina   (d) on black spot
Fill in the blank and write the answer against proper question number on answer sheet
13. Cause of movement in a body is ____________ energy
14. Indian Atomic Centre is situated in ____________
15. Which country launched Apollo 9
16. Why the ink from the fountain pen is asked to be remove before the aero-plane goes above?

For which discovery of principle are the following scientists related. Write down the answer against proper question number on answer sheet from the given list
List – Eistein, Isaac, Newtonm Darwin, Faraday, Edision, Rongtegen, C.V.Raman, Mandeleef, Ruther Ford
17. Raman Effect
18. Radio activity of Uranium
19. First electric bulb
20. Theory of Relativity

Write the answers of the following on the answer sheet against proper question number
21. Who made telephone?
22. Who invented radium?
23. Who invented pencillin?
24. Scientist of India who received Nobel Prize in 1968?

Section – B
Four answers of each of the following questions are given out of these only one is correct. Write correct answer (either a, b, c or d) on the answer sheet against proper question number
1. In the presence of the following mixture of Chlorine and Hydrogen gives Hydrogen Chloride gas
2. Water can be electrolyzed in
3. Which is the essential element of the acids
4. Chlorine gas is used for
5. α-rays are
6. for making vegetables ghee, the vegetable oils are hydrogenated in the presence of which catalyst?

Fill in the blanks and write the answer on the answer sheet against proper question number
7. Gold dissolves in the mixture of ______ acid and ______ acid
8. And this mixture is called ______
9. Allotropy of graphite is ______
10. Mixture of any metal with mercury is called ______

Following statement is ‘correct’ or ‘wrong’ write ‘correct’ or ‘wrong’ on the answer sheet
11. Equivalent weight of oxygen is 8 gms
12. Copper sulphate is iron sulphate
13. Water is a mixture of hydrogen and oxygen
14. Brass is a metal

Please write the answer on the answer sheet following statements

15. Please write steel factor in India

16. What is the freezing mixture

17. What is dye ice

18. Please write two rare glass

Please write the discovery made by the scientist from the following given list, against proper question number on the answer sheet

List – (a) Periodic Table (b) Oxygen (c) Radium (d) Principle of Relativity (e) Rule of fixed proportion (f) Radio activity

19. Madam Curie

20. Dalton

21. Mandeleef

22. Vockeral

Who propounded the following discoveries and principles? Write the correct name of the scientist from the list on the answer sheet against proper question number

List – Levoiser, Henry Cavandish, Bresilieus, Plank, Einstein, Proust, Edision.

23. Hydrogen

24. Symbols of Chemistry

25. Cathode Rays

26. Principle of Quantum
PART – IV
SCIENTIFIC VOCABULARY TEST

Introduction
Aim of this sub test is to know about your science knowledge. To complete this of 15 minutes is allowed

Section – A

Four answers of each of the following questions are given out of these only one is correct. Write correct answer (either a, b, c or d) on the answer sheet against proper question number

1. Unit on density in C.G.S. system is
   (a) gram centimeter    (b) Gram per cu. cm
   (c) gram per sec.       (d) dyne per cm

2. Unit of force in M.K.S system is
   (a) Dyne       (b) Poundal
   (c) Newton     (d) it is a ratio

3. A mass of mass M is kept at a height h. what shall be its potential energy?
   (a) mgh       (b) mg / h
   (c) mh / g     (d) m (g + h)

4. Value of I horse power is –
   (a) 550 foot pound    (b) 550 foot poundal per sec
   (c) 550 foot poundal per sec     (d) 550 pounds per sec

5. Relation of Joule and Erg is
   (a) 1 Joule = 10 Erg   (b) 10^19 Joule = 10^7 Erg
   (c) 1 Joule = 10^7 Erg   (d) 10^7 Joule = 1 Erg

6. On which of the following principle do siphon works –
   (a) Theory of movement   (b) Theory of atmospheric pressure
   (c) Theory of floating   (d) Principles of Archimedes

7. Calorie is a measure of
   (a) Water equivalent   (b) Relative temperature
   (c) Quantity of heat    (d) Conductivity of heat

8. Relation between Linear Expansion Coefficient and Volume Expansion Coefficient is
   (a) λ = 3α    (b) α = 3λ
   (c) λ = 2α    (d) α = 2λ

9. Mechanical Equivalent of heat is
   (a) W = J / H     (b) J = W / H
   (c) J = W / H     (d) J = H / W

10. Light is a kind of
    (a) Energy    (b) Power
    (c) Vacuum    (d) Medium

11. U and v are respective distances of object and image from a convex lens of focus f, then what shall be the magnification of image?
    (a) u x f     (b) v x f
    (c) u x v     (d) v / u
12. Equation giving inter-relation of wave velocity (v), frequency (N) and wavelength (λ) is
   (a) V = Nλ    (b) N = Vλ
   (c) λ = NV    (d) VNλ = 1

13. Unit of electric current is –
   (a) Ampere  (b) Farad
   (c) Volt    (d) Ohm

14. Capacity of rail engine is
   (a) that force which is applied to pull the rail
   (b) that distance which is covered in one hour
   (c) than time which is required to drag a train for 1 km
   (d) that work which can be done in unit time

Fill in the blanks and write the correct answer on the answer sheet against proper question number
15. Velocity = Distance / ?
16. Kinetic Energy K = ½ ?
17. E = M ? (Einstin equation)
18. Volt distance V - ? x R (resistance)

Write the units of the following against proper question number on the answer sheet
19. Relative Density
20. Volume
21. Magnification
22. Temperature
23. Refractive index
24. Quantity (in M.K.S unit)

Write ‘correct’ or ‘wrong’ against proper question number on the answer sheet
25. Latent heat of steam is 80 gm
26. Real image is formed if object is kept between lens and focus of a convex lens
27. I horse power is equal to 550 foot pound per second
28. Waves of voice travels faster than air in vacuum

Section - B
Four answers to each following questions are given. Write the correct answer (either a, b, c or d) against proper question number on the answer sheet
1. Some solids changes into gas stage when heated without changing into liquid. This property is called
   (a) Perspiration  (b) Transpiration
   (c) Vapourisation  (d) Sublimation
2. Which of the following is an example of chemical change?
   (a) Sublimation  (b) Crystallization
   (c) Precipitation  (d) Distillation
3. Places of solid having definite shape, are called
   (a) Molecule    (b) Atom
   (c) Crystal     (d) Electron

4. Those elements having similar chemical properties but different atomic weight are called
   (a) Isotope     (b) Isomerse
   (c) Isowerse    (d) Isoberg

5. Photosynthesis is called
   (a) the intake of oxygen in respiration by the plans
   (b) the intake of food in day by the plants
   (c) the presence of green colour in the chlorophyll or the plants
   (d) to produce CO$_2$, starch and sugar in the presence of chlorophyll and sunlight
        and liberating O$_2$

6. According to modern theory the molecular weight is –
   (a) molecular weight = electron + neutron
   (b) molecular weight = neutron + proton
   (c) molecular weight = proton + electron
   (d) molecular weight = electron + neutron

7. It is essential for rusting
   (a) air and moisture  (b) moisture
   (c) air, moisture and CO$_2$  (d) air

8. Equivalent weight of an element is M and its valency is V, its molecular weight is
   (a) $A = \frac{M}{V}$  (b) $A = \frac{V}{M}$
   (c) $A = V \times M$  (d) $A = V - M$

**Fill in the blanks and write the correct answer against proper question number on the mark sheet**

9. Simplest form of material like oxygen, iron, mercury, silver etc., are called __

10. Those chemical things which come in chemical reactions are called ______

11. Those liquids which changes to vapour at normal temperature are called ___

12. Smallest part of an element in which original properties of elements remain are called ______

**Write the answers of the following on the answer sheet**

13. What is the chemical name of baking soda?

14. Write chemical formula of washing soda

15. Write chemical formula of blue vitrol

16. Write chemical formula of alum

**Write chemical formula from the list given below of the following on the answer sheet**

17. Bleaching powder

18. Red lead

19. Magnetic oxide of iron

20. Caustic soda
Are the following material element, compound or mixture? Write the correct answer against the proper question number on the answer sheet

21. Marble  
22. Red Oxide  
23. Nacent Hydrogen  
24. Smoke

In the following questions two are different from other. Find them and write the number given below them against proper question number on the answer sheet

25. NaOH  KOH  Ca(OH)$_2$  Aquaregia  CO$_2$
   1  2  3  4  5

26. Amorphous Carbon Circle Graphite Charcoal
   1  2  3  4  5

27. Zn  Au  Na  Hgo  K$_2$O
   1  2  3  4  5

28. HCL  AgNO$_3$  HNO$_3$  H$_2$SO$_4$  KCl
   1  2  3  4  5