14 VERBAL REASONING AND SITUATIONAL JUDGEMENT

VERBAL REASONING

Many other types of links exist, including the combination of several types of the links mentioned above.

Strategy: Closely observe the pattern of relationship between the words given in the question and check if the same relationship exists between any pair in the answer choices given.

It is crucial to pay attention to the order of words. Answers which appear to be of similar logic to the given analogy may be false due to the words being presented in a different order.

The grammatical form of the words in the pairs is decisive. Generally speaking, the easiest way to find the connection between given words is by creating a sentence containing and linking between the two. You must then insert the proposed duo in the same manner and decide if there is a suitable match. It is important to check all possible answers; it is possible that more than one word duo will match the sentence, in which case you will need to create a new sentence with a narrower link between the two words.

05. THE SYLLOGISM:

The syllogism, consists of two propositions (called "premises") from which a third is deduced ("conclusion"), thus linking three statements or arguments. The two premises are often of the following form:

- The <u>major premise</u>, considered to be the most general statement, is the sentence containing the major term.
- The <u>minor premise</u> is the sentence that contains the term for the concluding statement of the syllogism.

The third sentence will contain the conclusion, deduced from the two premises. This consequence may be legitimate or illegitimate; a conclusion is illegitimate when, even though the premises are true, the outcome does not correspond to the statements of the first two exposures.

Example:

Statements:
All pens are pencils.
No pencil is a cap.

If these two statements are true, what is the most logical conclusion?

I.   All caps are pencils.
II.   Some caps are pencils.

Give answer:
a. if only conclusion I follows
b. if only conclusion II follows
c. if either conclusion I or II follows
d. if neither I nor II follows
e. if both conclusions I and II follow

Answer: (d). The right answer is d. Indeed, none of the conclusions presented are true.

Reference: https://www.aptitudetests.org/verbal-reasoning-test/

14   VERBAL REASONING AND SITUATIONAL JUDGEMENT

VERBAL REASONING

06.ENGLISH

The rules of English are the principles that govern the basics of the English language, covering vocabulary, grammar, conjugation and spelling. The questions may take the form of missing-word statements, be presented in multiple spellings, or refer to different times.

Definitions

According to the dictionary, the meaning of the word 'definition' is: determining the characteristics of a concept, a word, an object, etc.; all the essential properties of something.

Example:
The definition of the saying "make it up" is:

- A. Bluffing
- B. Betrayal
- C. Hiding out
- D. To triumph

Answer: The correct answer is answer A: Bluffing

Synonyms

According to the dictionary, the definition of a synonym is: terms that can be substituted for each other in a statement without changing its meaning.

Examples:
1. Select the synonym of semblance.

- A. Personality
- B. Image
- C. Attitude
- D. Ambition

Answer: The correct answer is answer B: Semblance and image are synonyms.

2. Choose the synonym pair.

- A. Private and Public
- B. Intrusive and Invasive
- C. Mysterious and Unknown
- D. Common – Unique

Answer: The correct answer is answer B: Intrusive and invasive are synonyms.

Paronyms

According to the dictionary, the definition of a paronym is: words of different meaning but of relatively similar form.

Examples
collision : collusion
personnel : personal

Reference: https://www.aptitudetests.org/verbal-reasoning-test/

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14 VERBAL REASONING AND SITUATIONAL JUDGEMENT

VERBAL REASONING

personnel : personal
affect : effect
deprecate : depreciate

Antonyms
According to the dictionary, the definition of an antonym is: a word with a meaning that is contrary to that of another.

Examples:

hot : cold
holidays : school
snow : ice
ugliness: beauty
woman: daughter

Homonyms
According to the dictionary, the definition of homonym is: each of two or more words having the same spelling or pronunciation but different meanings and origins.

Examples:

- address (to speak to) / address (location)
- air (oxygen) / air (an impression of a quality or manner)
- band (a musical group) / band (a ring)
- bark (the outer layer of trees) / bark (the sound a dog makes)
- current (up to date) / current (flow of water)

Odd One Out
'Odd one out' questions are common in verbal comprehension tests. It is therefore important to be aware of the pitfalls that are often present in these types of questions.

Examples:
1. Find the odd one out in the following series of words:
   - September/August/June/Monday
   - Speak/Listen/Talk/Say
   - Tall/Happy/Sad/Surprised
2. Which of the following is the odd one out:
   A. Coin
   B. Banknote
   C. Cheque
   D. Letter
   E. Credit Card

Answer: The correct answer is the answer D: 'Letter'

Reference: https://www.aptitudetests.org/verbal-reasoning-test/

14 VERBAL REASONING AND SITUATIONAL JUDGEMENT

SITUATIONAL JUDGEMENT

SITUATIONAL JUDGEMENT

Situational Judgment Tests present candidates with situations and ask them to evaluate several different courses of action that a person could take in that situation. Situational judgment tests aim to assess your judgment, character, and skills in different professional situations, such as conflict management, and ethical issues. It can be presented in different forms.

Broadly speaking, situational judgement tests are looking to get a sense of the candidate's ability in each of these four competencies:

- **Communication skills**: How persuasive are you? Can you select the best means to communicate on someone's level and empathise with them?
- **Teamwork:** Are you willing to prioritise the needs of a team above an individual? Are you capable of encouraging team members effectively?
- **Decision making:** Can you exercise discretion and solid judgement when a situation requires action to be resolved?
- **People skills:** How do you approach feedback? How do you demonstrate leadership?

Situational Judgement Tests (or 'SJTs', as they are often abbreviated to) come in a great variety of guises and have been growing in popularity as an assessment method since the late nineties. Situational judgement tests present candidates with a range of different situations that they might experience in the field for which they are applying. For each situation, a number of possible actions are suggested. There are usually around 4 or 5 actions but this varies. It is the candidate's job to choose between these possible options and judge which is the most effective course of action to take and therefore which action they would take if faced with this situation. SJTs are always multiple-choice; no answers other than the options listed are allowed.

Situational judgement tests can be presented in a variety of different ways and ask candidates for different ways to respond to the situations presented.

There are a variety of ways in which you will be asked to respond to situational judgement test questions:

1. Most and least effective

The situation is presented with four or five possible responses and you are asked to indicate which is 'most' and which is 'least' effective in your judgement.

2. Rated responses

Here the situation is presented with the possible responses and you are asked to rate each response for effectiveness, in your judgement.

3. Ranked responses

The situation is presented with the possible responses and you are asked to place the responses in rank order as to how effective or appropriate they are. Here you will only be able to allocate each number once. So only one response can be ranked '1', only one response '2', only one ranked '3' and only one ranked as '4'.

The numbers may be given explanatory labels e.g. 1 = most appropriate, 4 = least appropriate. OR 1 = most effective, 2 = next most effective, etc. Or they may be left simply as numbers for you to allocate the rank order.

Reference: https://www.assessmentday.co.uk/situational-judgement-test.htm

14 | VERBAL REASONING AND SITUATIONAL JUDGEMENT

SITUATIONAL JUDGEMENT

4. Likely to perform

This is a variation on 'most effective' and 'least effective'. You are given the possible actions or responses and asked to say which you are 'most likely to do' given the situation with which you have been presented and which you would be 'least likely to do'.

SITUATION REACTION TEST

A student will be presented with a situation and they have to judge the situation and react accordingly. Once the situation has been understood they have to choose the correct reaction from the given number of choices. Only the information given has to be used and any other assumptions should not be made. Lateral thinking has to be exercised in arriving at a decision. This test judges the reasoning power of the candidate and his/her ability to react properly and promptly to a situation that may arise in an emergency.

You will be presented Multiple Choice Questions (MCQs) based on Situation and Reaction Concepts, where you will be given four options. You will select the best suitable answer for the question.

Example:

Situation: When you reached the railway platform to catch the train to Bhubaneswar you have seen that the train is about to start and you have not bought the ticket yet.

Options :

A - Catch the train and in the next stoppage inform the T.T.I about your problem.

B - Wait for the next train.

C - Don't enter the train without any ticket.

D - Rush to the train and when the TT comes hide yourself in the toilet.

Answer – Option A

Explanation:

If you get caught then you would be fined, so the best and most ethical option is enter the train and inform the TT about your problem.

SITUATION PUZZLES:

A Situation puzzle is one in which you are given a seemingly unusual set of circumstances and you have to try and figure out what happened or what's going on. Think of a situation puzzle as a riddle that requires you to think out-of-the-box to fill in the missing parts of a very strange, short story.

In general, lateral thinking puzzles can have multiple solutions since by their nature they are open-ended. However, there is often one "best" solution for each puzzle. When attempting to solve a lateral thinking puzzle analyze the clues carefully and don't forget to think really far outside of the box. In attempting to solve these puzzles, look for words that may have multiple meanings as this could be a hint to the puzzle's solution.
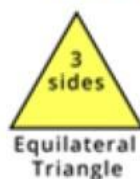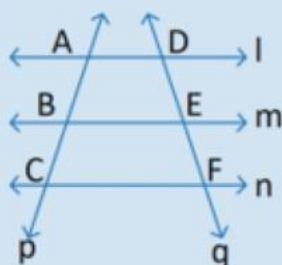
Example:

A family has a chicken coop containing one dozen egg producing hens. One night, a terrible storm came and killed all but eight chickens. How many chickens did the family have in the morning?

Answer:The family still had 12 chickens: 4 dead ones and 8 alive!

Reference: https://www.tutorialspoint.com/reasoning/reasoning_situation_and_reaction_examples.htm

15 | NUMERICAL REASONING

GEOMETRY

REGULAR POLYGON

- Sum of all interior angles of a regular polygon of side n is given by **(2n – 4) 90°**.
- Angle of a regular polygon = **((2n-4)90°)/n**
- Sum of an interior angle and its adjacent exterior angle is 180°
- Sum of all exterior angles of a polygon taken in order is 360°.

| 3 sides | 4 sides | 5 sides | 6 sides |
| Equilateral Triangle | Square | Regular Pentagon | Regular Hexagon |

| 7 sides | 8 sides | 9 sides | 10 sides |
| Regular Heptagon | Regular Octagon | Regular Nonagon | Regular Decagon |

PROPERTY OF INTERCEPTS MADE BY THREE PARALLEL LINES

If AD || BE || CF ,

then $\dfrac{AB}{BC} = \dfrac{DE}{EF}$

The ratio of intercepts made on transversal by 3 parallel lines is equal to ratio of corresponding intercepts made on any other transversal of the same parallel lines

BASIC PROPORTIONALITY THEOREM
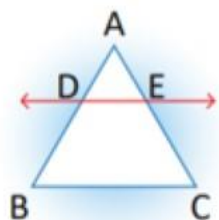
If DE || BC , then by BPT

$\dfrac{AD}{DB} = \dfrac{AE}{EC}$

If a line is parallel; to a side of a triangle which intersects other two sides in distinct points, then the line divides other two sides in proportion.

CYCLIC QUADRILATERAL

In a cyclic quadrilateral, the sum of a pair of opposite angles is 180°(supplementary).
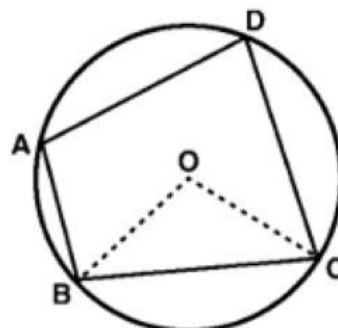
The area of a cyclic quadrilateral is
Area=√(s−a)(s−b)(s−c)(s−d)
where a, b, c, and d are the four sides of the quadrilateral.

∠ at Centre
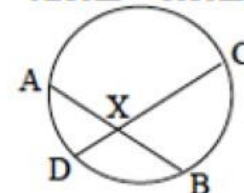$\angle a = 2 \angle b$
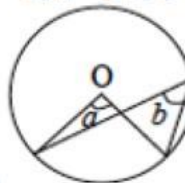
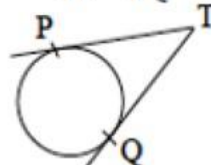**∠s in Same Segment**
$\angle a = \angle b$
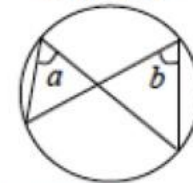
Equal chords equidistant from centre
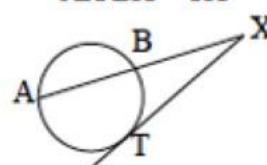$AB = CD \leftrightarrow OP = OQ$
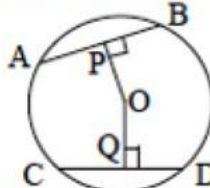
Intersecting Chords Theorem
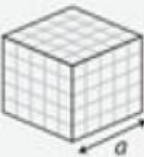$AX \cdot XB = CX \cdot XD$
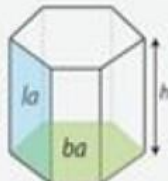
Tangents from external point
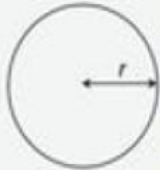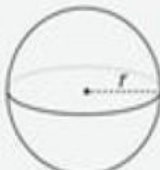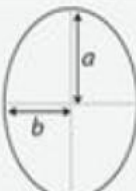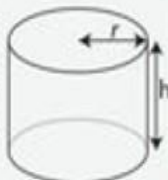$TP = TQ$
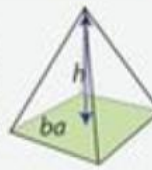
Tangent-Secant Theorem
$AX \cdot BX = TX^2$

15 NUMERICAL REASONING

MENSURATION

Two-dimensional plane shapes	Area *The measure of how many squares will fit into a shape.* *Units²*	Three-dimensional solid shapes	Surface Area *The measure of the area of all outward facing sides.* *Units²*	Volume *The measure of how many cubes will fit into a shape.* *Units³*
Square	Area = a^2 or $a \times a$ **Example:** $a = 5cm$ Area = $5^2 = 25cm^2$	**Cube**	Surface Area = $6 \times a^2$ **Example:** $a = 5cm$ Surface Area = $150cm^2$	Volume = a^3 or $a \times a \times a$ **Example:** $a = 5cm$. Volume = $125cm^3$
Rectangle	Area = $w \times h$ **Example:** $w = $ width $= 10cm$ height $= 20cm$ Area $= 10 \times 20 = 200cm^2$	**Prism**	Surface Area = $2 \times ba + la$ **Example:** $ba = $ base area $= 20cm^2$ $la = $ lateral area (all sides) $= 60cm^2$ Surface area = $2 \times 20 + 60 = 100cm^2$	Volume = $ba \times h$ **Example:** $ba = $ base area $= 20cm^2$ $h = $ height $= 5cm$ Volume $= 20 \times 5 = 100cm^3$
Triangle	Area = $b \times h \times 0.5$ **Example:** $b = $ base $= 20cm$ $h = $ vertical height $= 15cm$ Area $= 20 \times 15 \times 0.5 = 150cm^2$	**Pyramid**	Surface Area = $ba + la$ **Example:** $ba = $ base area $= 16cm^2$ $la = $ lateral area (all sides) $= 60cm^2$ Surface area $= 16 + 60 = 76cm^2$	Volume = $ba \times h \times 1/3$ **Example:** $ba = $ base area $= 16cm^2$ $h = $ height $= 9cm$ Volume $= 16 \times 9 \times 1/3 = 48cm^3$
Reg Polygon	Area = $n \times s \times a \times 0.5$ **Example:** $n = $ number of sides $= 6$ length of side $= 5cm$ $a = $ apothem $= 15cm$ Area $= 6 \times 5 \times 15 \times 0.5 = 225cm^2$	**R. Polyhedron**	Surface Area = $fa \times s$ **Example:** $fa = $ area of one side $= 200cm^2$ $s = $ number of sides $= 12$ Surface area $= 200 \times 12 = 2400cm^2$	**Example:** There is no simple generic formula for working out the volume of a regular polyhedron.
Circle	Area = $\pi \times r^2$ **Example:** $\pi = $ pi $= 3.14$ $r = $ radius $= 5cm$ Area $= 3.14 \times 5^2 = 3.14 \times 5 \times 5 = 78.5cm^2$	**Sphere**	Surface Area = $4 \times \pi \times r^2$ **Example:** $r = $ radius $= 4.5cm$ Surface area $= 4 \times 3.14 \times 20.25$ $= 254.5 cm^2$ (Approx)	Volume = $4/3 \times \pi \times r^3$ **Example:** $r = $ radius $= 4.5cm$ Volume $= 4/3 \times 3.14 \times 4.5^3$ $= 381.5cm^3$ (Approx)
Ellipse	Area = $\pi \times a \times b$ **Example:** $\pi = $ pi $= 3.14$ $a = $ radius of long axis $= 6$ $b = $ radius short axis $= 4$ Area $= 3.14 \times 6 \times 4 \times 5 = 75.36cm^2$	**Cylinder**	Surface Area = $2\pi rh + 2\pi r^2$ **Example:** $r = $ radius $= 5cm$ $h = $ height $= 10cm$ Surface area $= 2 \times 3.14 \times 5 \times 10 + 2 \times 3.14 \times 25 = 471cm^2$	Volume = $\pi \times r^2 \times h$ **Example:** $r = $ radius $= 5cm$ $h = $ height $= 10cm$ Volume $= 3.14 \times 25 \times 10 = 785cm^3$ (Approx)

Source: skillsyouneed.com

15 | **NUMERICAL REASONING**

BASICS OF TRIGONOMETRY

TRIGONOMETRIC RATIOS

The most important task of trigonometry is to find the remaining side and angle of a triangle when some of its side and angles are given. This problem is solved by using some ratio of sides of a triangle with respect to its acute angle. These ratio of acute angle are called trigonometric ratio of angle. Let us now define various trigonometric ratio.
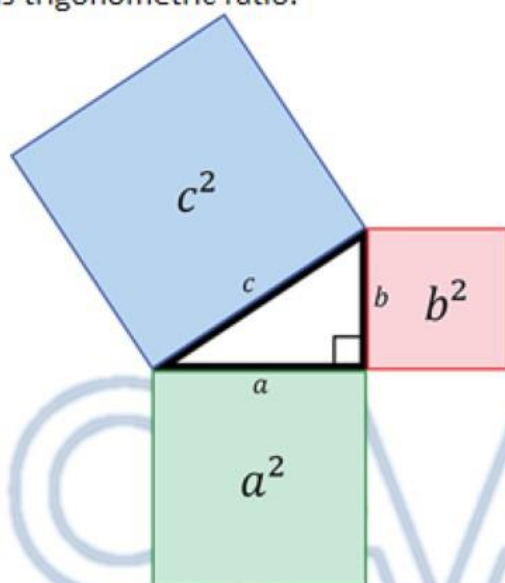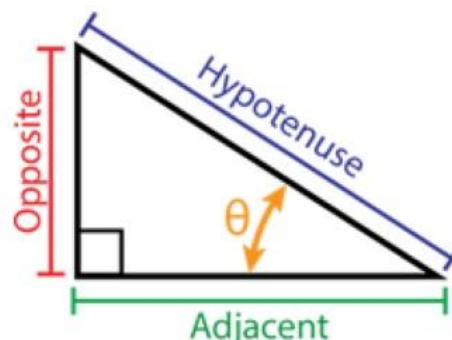
Sin θ	= Perpendicular/ Hypotenuse
Cos θ	= Adjacent / Hypotenuse
Tan θ	= Perpendicular / Adjacent
Cosec θ	= Hypotenuse / Perpendicular
Sec θ	= Hypotenuse / Adjacent
Cot θ	= Adjacent / Perpendicular

PYTHAGORAS THEOREM

The square on the hypotenuse is equal to the sum of the squares on the other two sides.

$$c^2 = a^2 + b^2$$

θ T-ratio	0°	30°	45°	60°	90°
sin θ	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
cos θ	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
tan θ	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	Not defined
cosec θ	Not defined	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	1
sec θ	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	Not defined
cot θ	Not defined	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0

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