ISAT

International Student Admissions Test

Sample Questions

Sample questions

The following units are included to give candidates an idea of the style and type of ISAT questions.
These questions are similar to questions which may appear on ISAT.

Sample questions: Quantitative Reasoning

Unit 1: Solar System

Questions 1 – 4

Our solar system is composed of nine* planets that travel around a star we call the Sun. Figure 1 indicates the relative sizes of the planets and their order from the Sun. Table 1 provides further information about the planets (based on information known around the year 2000).

- An orbit is the path a planet takes as it travels completely around the Sun.
- The length of a year for a planet is the time it takes for the planet to travel once around the Sun.
- The length of a day for a planet is the time it takes to spin around once on its axis.
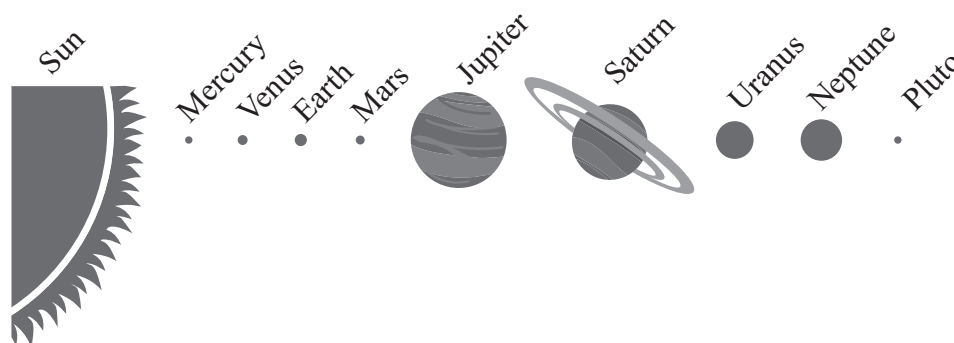

Figure 1

Table 1

Planet	Mean distance from the Sun (× 1,000,000 km)	Diameter (km)	Number of moons	Average orbital speed (km/s)	Time to orbit the Sun (Earth years)	Length of day (hours)
Mercury	58	4,880	0	48.0	0.24	1416
Venus	108	12,100	0	35.0	0.62	5832
Earth	150	12,760	1	30.0	1.00	24
Mars	228	6,800	2	24.0	1.88	24.6
Jupiter	778	143,800	16	13.0	11.86	9.84
Saturn	1,427	120,000	18	10.0	29.46	10.23
Uranus	2,870	52,300	15	6.8	84.01	17.24
Neptune	4,497	49,500	8	5.4	164.79	18.4
Pluto	5,900	3,000	1	4.7	247.70	153.4

 *   recently Pluto has been downgraded to a minor planet.

1   Which one of the following statements is supported by the data?

    A   Day length increases as distance from the sun decreases.
    B   Orbital speed increases as year length decreases.
    C   Diameter increases as orbital speed increases.
    D   Year length decreases as diameter increases.

2   Which of the following statements is best supported by the data?

    A   Planets further from the sun travel faster and therefore have shorter days.
    B   Planets closer to the sun travel faster and therefore have shorter days.
    C   Planets with longer days travel slower and are closer to the sun.
    D   Day length is unrelated to average orbital speed and distance from the sun.

3   Which of the following is the best estimate of the number of Neptune days that equal ten Earth days?

    A   4
    B   8
    C   12
    D   16

4   Which of the following is the best estimate of the number of Saturn days in an Earth year?

    A   1600
    B   800
    C   400
    D   100

Unit 2: Heat Loss

Questions 5 – 7

When fighting bushfires, a major problem for firefighters is dealing with the heat. Heat enters, leaves or is produced in a firefighter's body by the following processes:

• radiation — heat from the fire and the sun radiate to the firefighter's body.

• conduction/convection — body heat is carried away by the surrounding air.

• metabolism — heat is produced in the firefighter's body.

• evaporation of sweat — heat is removed from the firefighter's body as sweat evaporates from skin and clothing.

In a study of heat balance in firefighters, two groups of firefighters built a firebreak — a hard physical task. One group did so next to a fire. The other group did exactly the same work under the same conditions except that no fire was burning nearby. Table 1 gives the average results for the firefighters in the two groups.

Table 1

	Amount of heat gained or lost per minute by the body	
Process	**fire nearby**	**no fire nearby**
Radiation	gain of 260 joule	gain of 51 joule
Conduction / convection	loss of 60 joule	loss of 80 joule
Metabolism	gain of 488 joule	gain of 561 joule
Evaporation of sweat	loss of 688 joule	?

The amount of sweat that evaporates is the amount that is required to keep the body's temperature constant (i.e. the sum of gains and losses will be zero). Note that no value is given for the evaporation of sweat when building a firebreak with no fire nearby.

• Although Table 1 provides average results, assume that these apply to any individual firefighter.

• Although some of the processes can transfer heat to or from a firefighter, this unit and Table 1 refer to net gains or losses of heat by each process. Use the figures given in the table when answering the questions.

5   When building a firebreak, the body of a firefighter

    A   loses heat by radiation and gains heat by conduction/convection.
    B   gains heat by radiation and loses heat by conduction/convection.
    C   loses heat both by radiation and conduction/convection.
    D   gains heat both by radiation and conduction/convection.

6   The heat lost by evaporation of sweat from the body of a firefighter in one minute while building a firebreak without a fire nearby is

    A   532 joule.
    B   590 joule.
    C   612 joule.
    D   688 joule.

7   Which one of the following increases when a firefighter moves from an area where there is no fire nearby to an area where there is a fire nearby?

    A   the amount of heat produced per minute by metabolism
    B   the amount of heat lost per minute by conduction/convection
    C   the amount of heat lost per minute by the evaporation of sweat
    D   none of A or B or C

Unit 3: Stride Length

Questions 8 – 11

Figures 1 and 2 provide some information about a model of the relationship between leg length (L), stride length (S) and speed (v) of various animals. For any individual, stride length and speed can vary, but leg length is fixed.

Figure 2 relates *Relative Stride Length* ($\frac{S}{L}$) to a parameter known as the *Froude Number* ($\frac{v}{\sqrt{gL}}$).

The line of best fit shown was obtained from individuals, travelling at various speeds, of a number of four-legged and two-legged animal species. Also shown are three points based on values obtained from individuals of three species.

- L and S are in metres (m)
- v is in metres per second (m s^{-1})
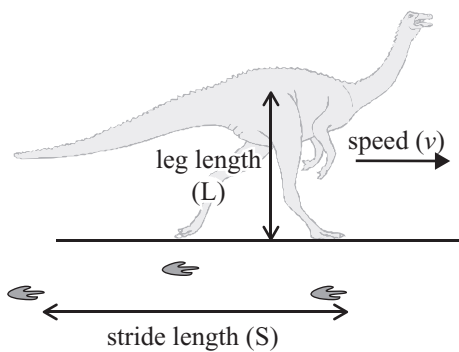- g is acceleration due to gravity on Earth and is approximately equal to 10 m s^{-2}
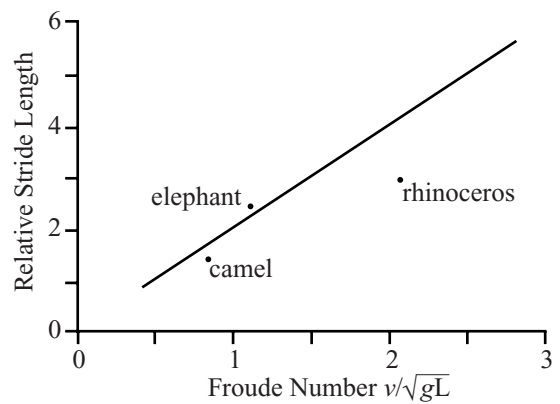

Figure 1

Figure 2

8 If an animal has a Relative Stride Length of more than 2, it is considered to be running.

Which of the individual animals shown in Figure 2 was running?

A the elephant only
B the rhinoceros only
C the camel and the rhinoceros
D the elephant and the rhinoceros

5

9 For the line of best fit, the ratio of Relative Stride Length to Froude Number is approximately

    A   1:1 .

    B   1:2 .

    C   2:1 .

    D   4:1 .

10 Based **just** on Figure 2, which of the individual animals shown had the greatest leg length?

    A   elephant

    B   camel

    C   rhinoceros

    D   There is insufficient information provided to answer this question.

11 According to the line of best fit, two animals with the same Froude Number must have approximately the same value for

    A   S/L.

    B   *v* only.

    C   L only.

    D   both *v* and L

Sample questions: Critical Reasoning

Unit 4: Text

Questions 12 – 14

The following passage describes the experiences of a man who has had surgery that has given him vision after a lifetime of blindness.

One man when shown an orange a week after beginning to see, said that it was gold. When asked, 'What shape is it?' he said, 'Let me touch it and I will tell you!' After doing so, he said that it was an orange. Then he looked long at it and said, 'Yes, I can see that it is round.' Shown next a blue square, he said it was blue and round. A triangle he also described as round. When the angles were pointed out to him he said, 'Ah. Yes, I understand now, one can *5* see how they feel.' For many weeks and months after beginning to see, the person can only with great difficulty distinguish between the simplest shapes, such as a triangle and a square. If you ask him how he does it, he may say, 'Of course if I look carefully I see that there are three sharp turns at the edge of one patch of light, and four on the other.' But he may add peevishly[1], 'What on earth do you mean by saying that it would be useful to know this? The *10* difference is only very slight and it takes me a long time to work it out. I can do much better with my fingers.' And if you show him the two shapes the next day he will be quite unable to say which is a triangle and a square.

[1] *impatiently or irritably*

12   One week after beginning to see, the man

   A   related shapes directly to visual images.
   B   formed visual impressions of shapes indirectly.
   C   recognised shapes by associating them with colour.
   D   no longer relied on his sense of touch to recognise shapes.

13   The man's mistake about the square (lines 6–7) suggests that

   A   his vision was still impaired.
   B   he could not make full use of visual clues.
   C   the idea of shape was meaningless for him.
   D   colour made shape perception more difficult.

14   The passage suggests that shape perception is generally dependent on

   A   experience.
   B   clear vision.
   C   natural ability.
   D   colour perception.

Unit 5: Work Cartoon

Question 15

Consider the following cartoon.

WE GO TO WORK — TO EARN THE CASH — TO BUY THE FOOD — TO GAIN THE STRENGTH — TO GO TO WORK
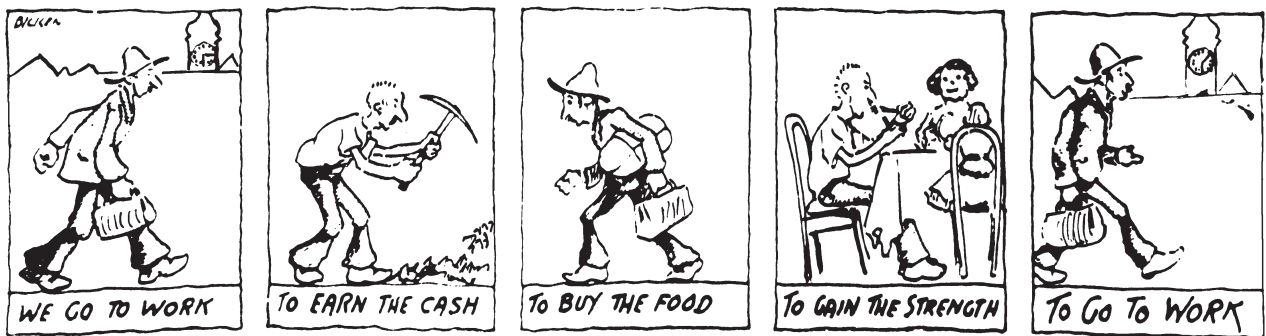
15 The cartoon

    A   is a celebration of work.

    B   questions the purpose of work.

    C   is a neutral explanation of work.

    D   suggests that work needs no justification.

Unit 6: Language

Questions 16 and 17

In the 18th century it was discovered that Sanskrit, an ancient language once spoken in India, is related to a range of European languages. The discovery was made by a British scholar working in India, Sir William Jones. The passage below discusses Jones's discovery.

Jones noticed many striking similarities between Sanskrit and European languages — the Sanskrit word for birch, for instance, was *bhurja*. The Sanskrit for king, *raja*, is close to the Latin *rex*. The Sanskrit for ten, *dasa*, is reminiscent of the Latin *decem*. And so on. All of these clearly suggested a common historical parentage. Jones looked at other languages and discovered further similarities. In a landmark speech to the Asiatic Society in Calcutta he *5* proposed that many of the classical languages — among them Sanskrit, Greek, Latin, Gothic, Celtic, and Persian — must spring from the same source. This was a bold assertion since nothing in recorded history would encourage such a conclusion, and it excited great interest among scholars all over Europe. The next century saw a feverish effort to track down the parent language, Indo-European, as it was soon called. *10*

16   The passage implies that

    A   Latin developed from Sanskrit.
    B   Sanskrit developed from Latin.
    C   Latin and Sanskrit both developed from a third language.
    D   the resemblances between Latin and Sanskrit are superficial.

17   Jones's fellow scholars regarded his discovery as

    A   a lucky guess.
    B   original and highly important.
    C   interesting but of little real importance.
    D   dangerous, since it challenged contemporary beliefs.

Unit 7: Image

Question 18

18 The above image suggests that we

  A   cannot escape conformity.
  B   can effectively disguise ourselves.
  C   appear to be anonymous but are unique.
  D   appear to be unique but are anonymous.

Unit 8: Statements

Questions 19 – 22

The numbered statements below are from a debate for and against the topic that
  animals should not be killed for sport.
For each numbered statement, choose the alternative
(A–D) that most appropriately describes the relationship of the statement to the topic of the debate.

  A   The statement is most probably part of the debate for the topic.
  B   The statement is most probably part of the debate against the topic.
  C   The statement could be part of the debate for or against the topic.
  D   The statement is not relevant to either the debate for or against the topic.

Statements

19 Animals feel pain just like humans do.

20 Hunting is a natural process in humans.

21 The real issue is whether there is any difference between humans and animals.

22 Some animals are killed to develop medicine for humans.

Answers to sample items

Unit 1: Solar System (Q)

1 B

2 D

3 C

4 B

Unit 2: Heat Loss (Q)

5 B

6 A

7 C

Unit 3: Stride Length (Q)

8 D

9 C

10 D

11 A

Unit 4: Text (V)

12 B

13 B

14 A

Unit 5: Work Cartoon (V)

15 B

Unit 6: Language (V)

16 C

17 B

Unit 7: Image (V)

18 C

Unit 8: Statements (V)

19 A

20 B

21 C

22 D