

Part A CCT Weekly Practice Mathematics

Unit 1 – Morse code

A ● —	J ● — — —	S ● ● ●
B — ● ● ●	K — ● —	T —
C — ● — ●	L ● — ● ●	U ● ● —
D — ● ●	M — —	V ● ● ● —
E ●	N — ●	W ● — —
F ● ● — ●	O — — —	X — ● ● —
G — — ●	P ● — — ●	Y — ● — —
H ● ● ● ●	Q — — ● —	Z — — ● ●
I ● ●	R ● — ●	

Morse code is a system for representing alphabets in the form of dots and dashes. It was invented by Samuel F.B Morse during the 1830's for electrical telegraphy. A group of friends were playing dumb charades using Morse code. The rules of the game are as follows.

- A word with less than 7 letters is given to one person in a team. This person needs to communicate the word using Morse code to his team members in 30 seconds in order to score 100 points. At the end of 30 seconds no communication is allowed.
- You use short blinks to signal dots and long blinks to signal dashes.
- An extra 5 seconds will be given to the team only to tell the answer. Teams that are not able to identify the word correctly in the extra 5 seconds will receive no points.
- Teams that identify the word correctly in under 30 seconds will receive bonus points equal to the time remaining in seconds. Only one chance is given to identify the word to discourage guessing.
- Once a wrong answer is given, the team loses their chance and gets no points. The word will not be passed to another team.
- After every letter a one second pause is mandatory. At the end of the 30 seconds, a beep is sounded. Team with maximum points at the end will win the game.

Question 1

Which of the following is always true for the word 'SOLO' while playing the game?

- The word can always be communicated in less than 30 seconds
- No bonus points will be received while communicating the word
- It takes a minimum of 25 seconds to clearly communicate this word using dots and dashes
- The ratio of dots to dashes for the word is less than 1

Question 2

During the game one team is given the word 'WAXED'. The team's strategy is to use short blinks of 1 second and long blinks of 3 seconds to signal dots and dashes respectively. How many bonus points will this team be able to win using the strategy given they follow all the rules?

- 0
- 1
- 4
- 5

Question 3

Which of the following does **NOT** increase the chances of winning the game for a given team?

- Giving the opponent team a word with the ratio of dashes to dots greater than 1.
- Selecting the words with letters K, O, J, Y and W for the opponent team.
- Using 1 second for short blinks and 2 seconds for long blinks.
- Opponent should always be given a 6-letter word.

Unit 2 – Batting Average

Player	Matches	Highest score in a match (in runs)	Average runs
Smith	54	104	57
Sachin	38	72	54
Rahul	41	91	52
Deepak	28	120	50
Avinash	19	59	48

Observe the table above and answer the following questions.

Question 4

The difference in total scores achieved by the highest scoring and lowest scoring batsman is _____

- 488
- 2166
- 2239
- Insufficient information to calculate

Question 5

Four statements were made about the performance of the 5 players. Which of the statements given below is true?

- Smith's lowest score is 35
- Rahul has never scored below 30
- Difference between Sachin's highest and lowest scores is 36
- Deepak has always scored above 50

Source of questions:

Centre for Teacher Accreditation (CENTA®) – m.centa.org

More practice questions and free learning resources available on m.centa.org.

Part B

MAJOR SURGERY

Major surgery, performed in specially equipped operating theatres, is necessary to treat many diseases.



Question 14: While undergoing major surgery, patients are anaesthetised so they don't feel any pain. The anaesthetic is often administered as a gas through a face mask that covers the nose and mouth.

Are the following human systems involved in the action of anaesthetic gases? Circle "Yes" or "No" for each system.

Is this system involved in the action of anaesthetic gases?	Yes or No?
Digestive system	Yes / No
Nervous system	Yes / No
Respiratory system	Yes / No

Question 15: Explain why surgical instruments used in operating theatres are sterilised.

.....
.....

.....

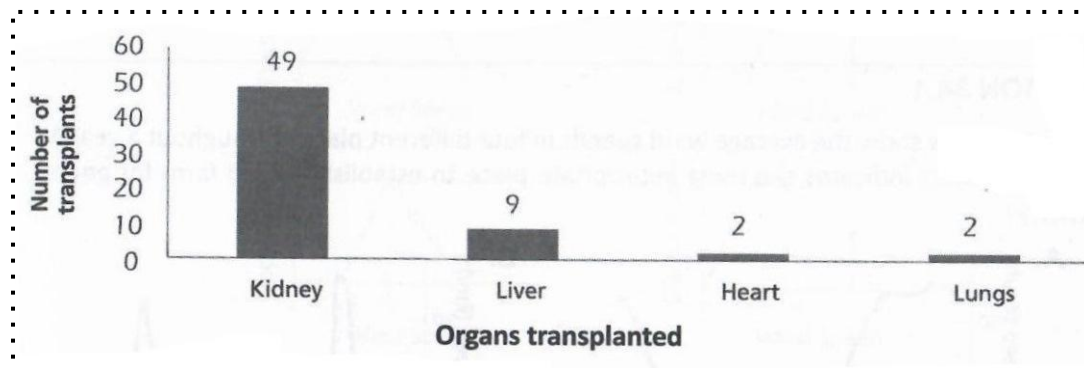
.....

Question 16: Patients may be unable to eat and drink after surgery and so they are put on a drip (infusion) that contains water, sugars and mineral salts. Sometimes antibiotics and tranquillisers are also added to the drip.

Why are the sugars that are added to the drip important for the post-operative patient?

- A. To avoid dehydration
- B. To control post-operative pain
- C. To cure post-operative infections
- D. To provide necessary nutrition

Question 17: Organ transplants involve major surgery and are becoming more and more common. In the graph below, the numbers of transplants carried out in a particular hospital during 2003 are given.



Can the following conclusions be drawn from the graph above? Circle “Yes” or “No” for each conclusion.

Can this conclusion be drawn from the graph?	Yes or No?
If the lungs are transplanted, the heart must be transplanted too.	Yes/No
Kidneys are the most important organs in the human body.	Yes/No
Most of the patients that have a transplant have suffered from a kidney disease	Yes/No

Part A

CCT Weekly Practice Mathematics

Answers

1. d) The ratio of dashes to dots is less than 1 for SOLO. This is always true irrespective of the strategy employed for communicating the word.
2. d) Using the given strategy, it will take 30 seconds to communicate the word in dots and dashes with pauses after each letter. Therefore, the team will not receive any bonus points for this word.
3. d) This strategy will not always lead to an increase in chances of winning. Having a 6-letter word containing letters with more dots than dashes can increase the chance of winning bonus points for the opponent team.
4. a) Total scores of Deepak and Avinash are 1400 and 912 respectively.
Total score = Average score x Total matches
5. c) Sachin's average batting score is 54 and highest score is 72. The difference is 18. So, the difference between the lowest score and average should also be 18. Lowest score = 36, Highest score = 72;

Source of questions:

Centre for Teacher Accreditation (CENTA[®]) – m.centa.org

More practice questions and free learning resources available on m.centa.org.

The solution for Part B is explained in Video Solution.