

TIMSS
Sample High School
Mathematics and Science Test (Grade 12)

Instructions

- Please enter an identity code using the following information: username (or code name), grade, city, state, country

Example: cooljr/grade12/utica/ny/usa

- Click on the circle to answer each multiple choice question.
 - To answer the free form questions type in your answer
 - Use the scroll down bar to advance to the next question.
- When you have completed all the questions press the "Submit" button at the bottom of the test.
 - Your test results and links for assessing your results will appear within seconds.

The bullets in the bottom corner of each problem indicate the question has not been answered. Questions left unanswered will be given a value of nr(no response).

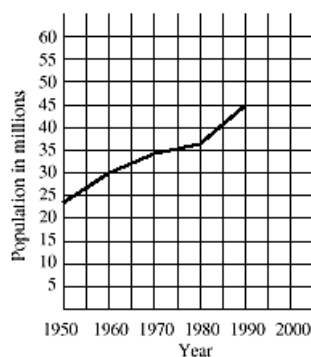
1) Experts say that 25% of all serious bicycle accidents involve head injuries and that, of all head injuries, 80% are fatal.

What percentage of all serious bicycle accidents involve fatal head injuries?

- A) 16%
- B) 20%
- C) 55%
- D) 105%



2) If the population increases by the same rate from the year 1990 to the year 2000 as in the years from 1980 to 1990, approximately what is the expected population by the year 2000?



- A) 47 million
- B) 50 million
- C) 53 million
- D) 58 million



3) A school club is planning a bus trip to the wildlife park. A bus which will hold up to 45 people will cost 600 centros (units of money) and admission tickets cost 30 centros each.

If the cost of the trip, including bus and admission ticket, is set at 50 centros per person, what is the minimum number of people who must participate to ensure that these costs are covered?

- A) 12
- B) 20

- C)30
 D) 45

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4) A 45 000-litre water tank is to be filled at the rate of 220 liters per minute.

Estimate, to the nearest half an hour, how long it will take to fill the tank.

- A) 4 hours B) 3 1/2 hours C) 3 hours D) 2 1/2 hours

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5) If there are 300 calories in 100 grams of a certain food, how many calories are there in a 30 gram portion of that food?

- A)90
 B)100
 C) 900
 D) 1000
 E)9000

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6)

In a vineyard there are 210 rows of vines. Each row is 192 m long and plants are planted 4 m apart. On average, each plant produces 9 kg of grapes each season.

The total amount of grapes produced by the vineyard each season is closest to

- A)10 000 kg
 B)100 000 kg
 C)400 000 kg
 D)1 600 000 kg

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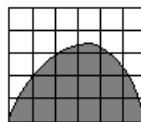
7) A store is having a '20% off' sale. The normal price of a is \$1250.

What is the price of the after the 20% discount is applied?

- A) \$1000
 B)\$1050
 C)\$1230
 D)\$1500

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8)

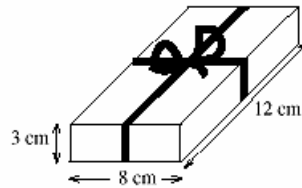


Each of the small squares in the figure is 1 square unit. Which is the best estimate of the area of the shaded region?

- A) 10 square units
 B)12 square units
 C) 14 square units
 D) 16 square units
 E) 16 square units

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9) Stu wants to wrap some ribbon around a box as shown and have 25 cm left to tie a bow.



How long a piece of ribbon does he need?

- A) 46 cm.
 B) 52 cm.
 C) 65 cm.
 D) 71 cm.
 E) 77 cm.

10) Brighto soap powder is packed in cube-shaped cartons. A carton measures 10 cm on each side. The company decides to increase the length of each edge of the carton by 10 per cent. How much does the volume increase?

- A) 10 cu.cm.
 B) 21 cu. cm.
 C) 100 cu. cm.
 D) 331 cu. cm.

11) In a school election with three candidates, Joe received 120 votes, Mary received 50 votes, and George received 30 votes.

What percentage of the total number of votes did Joe receive?

- A) 60%
 B) $66 \frac{2}{3}$ %
 C) 80%
 D) 120%

12) From a batch of 3000 light bulbs, 100 were selected at random and tested. If 5 of the light bulbs in the sample were found to be defective, how many defective light bulbs would be expected in the entire batch?

- A) 15
 B) 60
 C) 150
 D) 300
 E) 300

13) Teresa wants to record 5 songs on tape. The length of time each song plays for is shown in the table.

| Song | Length of Time |
|------|----------------------|
| 1 | 2 minutes 41 seconds |
| 2 | 3 minutes 10 seconds |
| 3 | 2 minutes 51 seconds |
| 4 | 3 minutes |
| 5 | 3 minutes 32 seconds |

Estimate to the nearest minute the total time taken for all five songs to play and explain how this estimate was made.

- A) 13 minutes
- B) 14 minutes
- C) 15 minutes
- D) 17 minutes

14) Nuclear energy can be generated by fission or fusion. Fusion is not currently being used in reactors as an energy source. Why is this?

- A) The scientific principles on which fusion is based are not yet known.
- B) The technological processes for using fusion safely are not developed.
- C) The necessary raw materials are not readily available.
- D) Waste products from the fusion process are too dangerous.

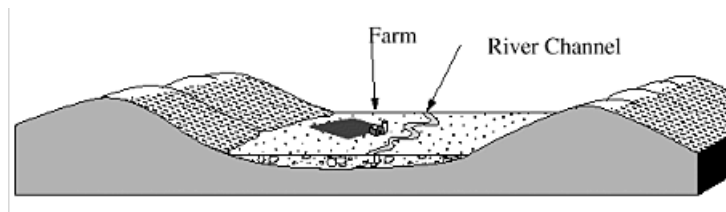
15) CFCs (chlorofluorocarbons) revolutionized personal and industrial life for 30 years. They were the coolant in refrigerators and the propellants in aerosols, pressure packs and fire extinguishers. There are now very strong international moves to stop the use of these substances because

- A) they are chemically inert.
- B) they contribute to the greenhouse effect.
- C) they are poisonous to humans.
- D) they destroy the ozone layer.

16) It is often claimed that “cooked vegetables are not as nutritious as the same kinds of vegetables uncooked.” What could be done to find out if this state-ment is true?

- A) Compare the weight of the vegetables before and after they are cooked.
- B) Compare the colour of the cooked and uncooked vegetables.
- C) Test the acidity of the water in which the vegetables are cooked.
- D) Compare the vitamin content of the cooked and uncooked vegetables.

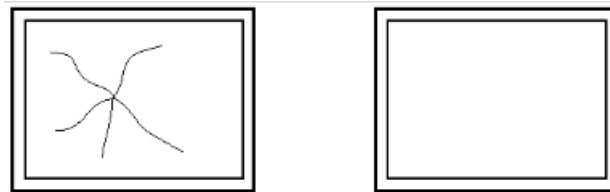
17) The diagram shows a river flowing through a wide plain. The plain is covered with several layers of soil and sediment.



Which is not a good reason this plain is a good place for farming?

- A) there is a river for irrigation
- B) it is a silent and peaceful place
- C) the goats can find grass in the mountains
- D) there is abundant soil

18) The sketch below shows two windows. The left window has been cracked by a flying stone. A tennis ball, with the same mass and speed as the stone, strikes the adjacent, similar window, but does not crack it. Which answer is not correct.



- A) there is a longer collision impact time and (therefore) smaller force for ball than stone.
- B) The surface area struck is greater on the tennis ball than on the stone.
- C) The shape of the stone has ridges and edges and can crack things.
- D) ball is soft and when it strikes the window it absorbs some of its own velocity and rebounds back.

19) Some high heeled shoes are claimed to damage floors. The base diameter of these very high heels is about 0.5 cm and of ordinary heels about 3 cm. Which answer most correctly explains why high heels may damage floors..

Why does this happen?

- A) the heels are very sharp and will cause marks on the floor
- B) there is greater pressure on the floor because of smaller area of the heels.
- C) The heels have a smaller area, that's why they cause damage to floors.
- D) A decrease in area increases the hardness of the heels.

20) José caught influenza. What is one way he could have caught it.

- A) From being out in the cold.
- B) From shaking hands
- C) From not wearing enough clothes
- D) From getting wet in the rain.

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