SST6 Mathematics (EDU)

Test 17

Test Code: _____

Student Name: _____ Student ID: _____

PLEASE READ THE INSTRUCTIONS BELOW CAREFULLY:

You may use the back of your answer sheet for your working. This is what you are given at the real exam to use as working paper.

DO NOT WRITE ANYWHERE ELSE ON THE EXAM PAPER

This test asks you to look at ___ material and to answer all the questions on this material.

- This test paper **CANNOT BE TAKEN OUT** of the classroom
- You **MUST GIVE THE TEST PAPER BACK** before you leave the classroom
- You must **WRITE YOUR NAME AND ID** on this page and the answer sheet
- You must **PUT AWAY ALL ELECTRONIC DEVICES** and any other materials that could help you on this exam
- **DO NOT TOUCH OR DRAW ON** the barcode that is on your answer sheet

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Advice for the test:

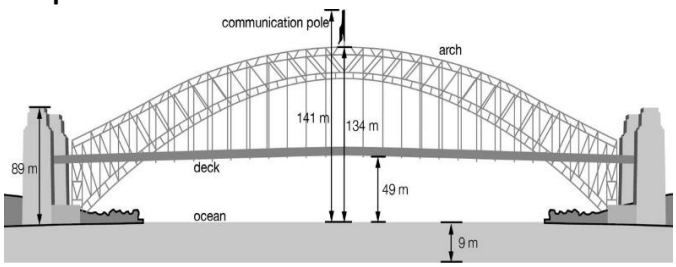
- For each question, you are given 4 or 5 possible answers marked A, B, C, D and E. Attempt to find the correct answer, and shade the corresponding bubble on the answer sheet.
- Each question is worth 1 mark, so try not to spend too long on one question – leave it for after you have finished the other questions.
- Check that the question number you are doing on the test paper is the same as the question number that you are shading on the answer sheet.
- There are no marks lost for incorrect answers, so even if you cannot solve a question, shade the box for the answer you think is most correct.

Instructions for the Answer Sheet:

- Use a B or HB pencil.
- Write your name, student ID and test code on the sheet.
- Shade the box which indicates your answer. All answers must be completed like THIS example:

- Marks will not be deducted for incorrect answers.
- No mark will be given if more than ONE answer is completed for any question.
- If you make a mistake, ERASE the incorrect answer – DO NOT cross it out.

Questions 1 and 2 are based on the following picture.



1. What is the distance from the top of the arch to the bottom of the ocean?
   A. 150m
   B. 141m
   C. 143m
   D. 134m
   E. 58m

2. What is the distance from the top of the communications pole to the bottom of the deck?
   A. 7m
   B. 49m
   C. 52m
   D. 58m
   E. 92m

3. Another way of writing 6^5 is:
   A. 5 × 5 × 5 × 5 × 5 × 5
   B. 6 × 6 × 6 × 6 × 6 × 5 × 5 × 5 × 5 × 5 × 5
   C. 6 × 5
   D. 6 × 6 × 6 × 6 × 6
   E. 6 x 5 x 5 x 5 x 5

4. Which one of the following has the same value as 18 × 6?
   A. 10 × 8 + 6
   B. 10 × 6 + 8 × 6
   C. 10 × 6 + 8
   D. 10 × 8 × 6
   E. 1+8x6

5. -12 – (-2) – (+2) simplifies to:
   A. -12 – 2 – 2
   B. -12 + 2 + 2
   C. -12 + 2 – 2
   D. -12 – 2 + 2
   E. 12 – 2 + 2

6. The highest common factor (HCF) of 8 and 12 is:
   A. 2
   B. 4
   C. 24
   D. 48
   E. 96

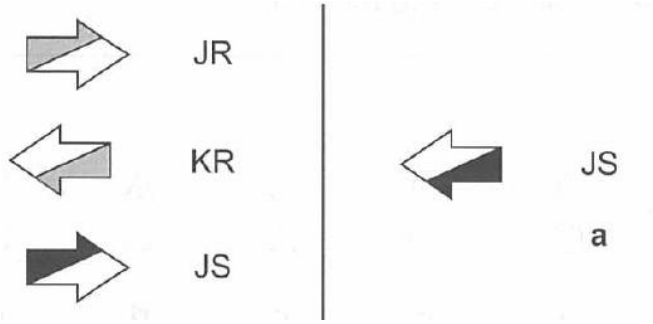
7. A farmer is planning to fence an area of 400 square meters for the calves on the farmer's property. What dimensions would give the paddock an area that is cheapest to fence?
   A. Length = 25 meters, width = 16 meters
   B. Length = 50 meters, width = 8 meters
   C. Length = 100 meters, width = 4 meters
   D. Length = 20 meters, width = 20 meters
   E. Length = 80 meters, width = 5 meters

8. Ms. Liang needs to get her car serviced at 20,000 km and so far she has travelled a distance of 18,789 km. How much further can she drive before it needs to be serviced?
   A. 1201 km
   B. 1211 km
   C. 1221 km
   D. 2111 km
   E. 2211 km

9. 30 + 44 ÷ 4 – 7
   A. 48
   B. 34
   C. 33
   D. 23
   E. 11.5

10. 160mL = _____kL
    A. 0.00016
    B. 0.0016
    C. 0.016
    D. 0.16
    E. 160 000 00

11. The question below has some shapes on the left with code letters that describe them. You need to work out what the code letters mean. There is a shape on its own next to a choice of five codes. Work out which code describes this shape.



A. A
B. B
C. C
D. D
E. E

12. Mr. Wei bought 204 durians for $182. ¼ of them were rotten. He sold the rest at 3 for $7. How much money did he make after taking into account the money he spent?
A. $175
B. $284
C. $356
D. $1246
E. None of the above

13. 76800 mm^2 = _____cm^2
A. 768000
B. 7680
C. 768
D. 76.8
E. 7.68

14. Harnoor is going to have a multi-course meal. The following table shows how many different dishes are offered for each course. Find how many different meal combinations Harnoor has to choose from.

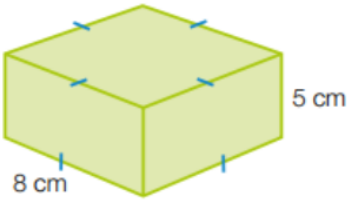
Course	Number of dishes
Appetizer	3
Main course	4
Dessert	3

A. 4
B. 10
C. 12
D. 24
E. 36

15. A fair 6-sided die is rolled. X stands for the number of times you would expect to get a 3 in 600 trials and Y stands for the number of times you would expect to get an even number in 1000 trails. Find the values of X and Y respectively.
A. X = 300, Y = 500
B. X = 100, Y =500
C. X = 300, Y = 200
D. X = 100, Y = 200
E. X = 1/6, Y = 1/2

16. Ryan and Shriyaas run a 10km race on a circular track of length 1000m. They complete one round in 200 seconds and 400 seconds respectively. After how much time from start will the faster person meet the slower person for the last time?
A. 6 minutes and 40 seconds
B. 13 minutes and 20 seconds
C. 30 minutes
D. 33 minutes and 20 seconds
E. None of the above

17. Find the volume of the following rectangular prism.



A. 40 cm^3
B. 200 cm^2
C. 512 cm^3
D. 320 cm^2
E. 320 cm^3

18. Which number is eighty million, two hundred thousand and twenty?
A. 80 200 020
B. 80 220 000
C. 8 200 020
D. 8 220 000
E. 802 020 020

19. Lolly is going to spin the wheel to determine the prize she will win in a TV game show. What is the probability that she will win a car?

A. 1/2
B. 1/6
C. 1/5
D. 1/3
E. 1/4

20. Leo took $700 to the horse races and he lost 8.4% of it on the first race. How much did he have left after the first race?
A. $58.8
B. $122.00
C. $588.80
D. $641.20
E. $670.80

21. For the set of numbers {3,4,5,8,x}, the mean, median and the mode are the same number. What is the value of x?
A. 3
B. 4
C. 5
D. 6
E. 8

22. $4\frac{1}{5} \div (\frac{5}{2})^2 =$
A. 5
B. $\frac{16}{125}$
C. $\frac{105}{4}$
D. $\frac{84}{125}$
E. $4\frac{25}{52}$

23. – 7 x 9 – (–8) x (–4) =
A. –95
B. –67
C. –32
D. –31
E. 31

24. Dennis is required to have 1.8 litres of food concentrate per day. How much food concentrate should Dennis have in each of his four meals?
A. 450 mL
B. ½ litre
C. 450 grams
D. 45 cubic centimetres
E. 0.45 cubic meters

25. Body Mass Index is one way of trying to work out whether you are within a healthy weight range. Angela weighs 64kg and is 160cm tall. Calculate her BMI and decide her weight status.

$$BMI = \frac{\text{weight (kg)}}{\text{height (m)}^2}$$

BMI	Weight status
Below 18.5	Underweight
18.5-24.9	Normal weight
25.0-29.9	Overweight
30.0-34.9	Obesity class I
35.0-39.9	Obesity class II
Above 40	Obesity class III

A. BMI = 2.5, underweight
B. BMI = 25, normal weight
C. BMI = 25, overweight
D. BMI =40, obesity class II
E. BMI = 40, obesity class III

26. Joshua, Alex and Girard won a $4500 lottery and decided to share the money in the ratio of 3:6:1. Find the difference of money between Joshua and Girard.
A. $450
B. $800
C. $900
D. $1350
E. $2250

27. Last Monday, the doctors in a medical practice saw 240 patients. 35% of the patients had sports injuries. How many of the patients didn't have sports injuries?
A. 156
B. 205
C. 212
D. 84
E. 175

28. A baby's expected adult height, H cm, can be predicted with the formula:
H = 24 + birth length in cm × 3.

Carol was 0.51 m long when she was born. What is her expected adult height?
A. 225 cm
B. 201 cm
C. 177 cm
D. 153cm
E. 73.5cm

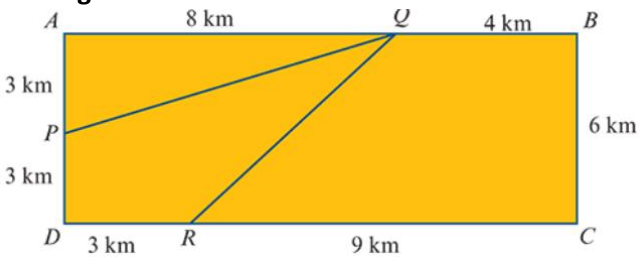
29. Jimmy is packing equal quantities of pretzels and crackers of snacks. Jimmy bags the pretzels in groups of 9 and the crackers in groups of 7. What is the smallest number of crackers that he can pack?
A. 1
B. 7
C. 9
D. 16
E. 63

30. 30.475≈ _____(to the nearest number)
A. 30
B. 30.4
C. 30.5
D. 31
E. 34

31. 160 x 80 =12 800. Find $12.8 \div 0.016$ =
A. 8000
B. 800
C. 80
D. 8
E. 0.8

32. Liudan bought a remote control car online. It cost $40 plus 10% shipping and handling. What was the total cost?
A. $440
B. $50
C. $44.4
D. $44
E. $40.4

Questions 33 and 34 are based on the following diagram.



33. Find the area of the region QBRC and state what the shape is.
A. 36 km^2, parallelogram
B. 39 km^2, parallelogram
C. 39 km^2, trapezium
D. 78 km^2, trapezium
E. 216 km^2, parallelogram

34. Find the area of the region PQRD
    A. 9 km^2
    B. 12 km^2
    C. 18 km^2
    D. 21 km^2
    E. 24 km^2

35. The sum of five consecutive prime numbers is 221. Find the difference between the smallest number and the largest number.
    A. 8
    B. 16
    C. 18
    D. 19
    E. 21

36. The product of M and 18 is a perfect cube number. Find the smallest value for M.
    A. 8
    B. 12
    C. 64
    D. 18 x 18 = 324
    E. 1000

37. For y < -2, which of the following has the largest value?
    A. $-(-y)^2$
    B. $-\frac{1}{y}$
    C. $1000y + 1000$
    D. $\frac{1}{y}$
    E. $-\mathrm{y} - 1$

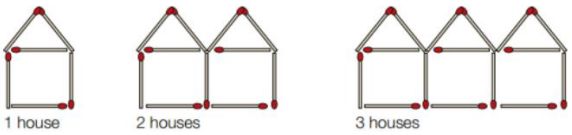
38. Write 1260 as prime index form.
    A. 6 x 10 x 21
    B. 3 x 2 x 2 x 5 x 3 x 7
    C. 4 x 325
    D. $2^2 \times 3^2 \times 5 \times 7$
    E. $2 \times 3 \times 5^2 \times 7^2$

39. On Cumming road, the local council plans to plant trees every 6 meters and install LED lights every 5 meters. The tree and light need to be at the same position at the beginning and end of the road. Find the shortest possible distance of the road.
    A. 5 meters
    B. 10 meters
    C. 30 meters
    D. 50 meters
    E. 60 meters

40. Ms. Kelly is thinking of a four-digit number which is divisible by 2, 3, 4 and 9. Which of the following number cannot be her number?
    A. 1836
    B. 2448
    C. 5400
    D. 6552
    E. 9916

41. The fraction in halfway of $\frac{1}{11}$ and $\frac{1}{13}$ is
    A. $\frac{1}{12}$
    B. $\frac{12}{142}$
    C. $\frac{51}{120}$
    D. $\frac{24}{143}$
    E. $\frac{24}{120}$

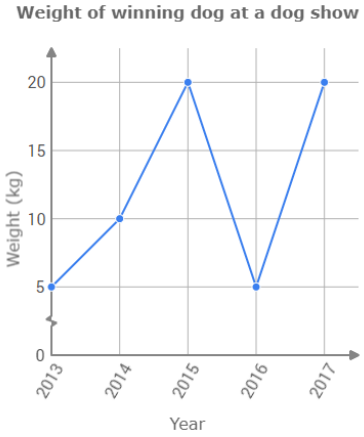
42. Here is a matchstick pattern of houses.



    Let h be the number of houses and m be the number of matches required. Find a rule that connects m to h.
    A. M = 6h
    B. M = 5h+3
    C. H = 6m
    D. H = $\frac{m}{6} + 2$
    E. M = 6 +5 (h-1)

43. There were 259 students enrolled in Mianyang Secondary College in 2019 and 300 students enrolled in 2020. Which of the following is the correct method to find the percentage increase?
    A. $\frac{300-259}{300} \times 100\%$
    B. $(300 - 259) \times 100\%$
    C. $\frac{300-259}{259} \times 100\%$
    D. $\frac{259}{300} \times 100\%$
    E. $\frac{300}{259} \times 100\%$

44. A dog show enthusiast recorded the weight of the winning dog at recent dog shows.



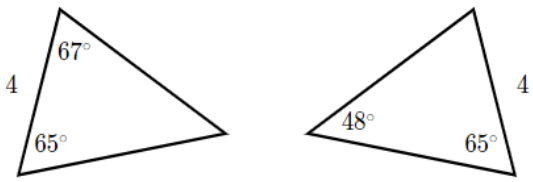
According to the graph, what was the rate of change between 2013 and 2017?

A. 0 kg per year
B. 3.75kg per year
C. 5kg per year
D. 10 kg per year
E. 15 kg per year

45. A bakery that makes birthday cakes has a daily set up cost of $45. The profit (P) for each cake (c) sold is $20. Write one formula uses c to represent P and find what is the profit or loss of selling 2 cakes in one day.

A. P = 20c. The profit is $40.
B. P = (20+45)c. The profit is $130.
C. P = 20c + 45. The profit is $85.
D. P = 20c—45. The loss is $5.
E. P = (45-20)c. The loss is $30.

46. Which of the following statement is not correct based on the two triangles below?



A. They are all acute triangles.
B. These two triangles are congruent.
C. These two triangles have different sizes of angles.
D. These two triangles have the same lengths.
E. These two triangles are similar.

47. 0.05x0.6=

A. 0.003
B. 0.03
C. 0.3
D. 3
E. 3.000

48. Rank the following numbers in a descending order.

① $\frac{1}{6}$ ② 0.1667 ③ $\frac{2}{5}$
④0.17 ⑤ -0.04 ⑥1.6%

A. ③④②①⑥⑤
B. ③④①②⑥⑤
C. ③②①④⑤⑥
D. ④③②①⑤⑥
E. ④②③⑥①⑤

Questions 49 and 50 are based on the following information.

There are 200 students enrolled in SST6 at Top Scope College. 64 students have one cat at home and 112 have a dog at home.

49. If a random SST6 student is chosen, what is the chance (in percent) that a student has either a cat or dog at home?

A. 17.6%
B. 32%
C. 0.88
D. 8.8%
E. 88%

50. Out of all SST6 students, 114 perform in band and 56 perform in chorus. There is a 75% chance that a SST6 student performs in either band or chorus. What is the probability a SST6 student perform both in band and in chorus?

A. 8.5%
B. 10%
C. 25%
D. 85%
E. None of the above

The number of students who do either
= 200 x 75% = 150.

51. $1\frac{1}{2} \times 1\frac{1}{3} \times 1\frac{1}{4} \times \ldots 1\frac{1}{999} \times 1\frac{1}{1000} = ?$

A. $\frac{1}{1000 \times 999 \times 998 \times \ldots \times 1}$

B. $1000 + \frac{1}{1000 \times 999 \times 998 \times \ldots \times 1}$

C. $\frac{3}{1000}$

D. $\frac{1001}{2}$

E. $\frac{3003}{2000}$

52. Neil's mum promises to give Neil 1/3 of his sister's pocket money and give 1/5 of Neil's money to Neil's younger brother. In total, his mum plans to use $210 to reward her three children. Find how much Neil's younger brother would receive.

A. $5

B. $10

C. $25

D. $30

E. $50

53. Solve the simultaneous equations

$$2(x + y) = 16$$
$$3x - 3y = 81$$

A. $x = 5, \quad y = 3$

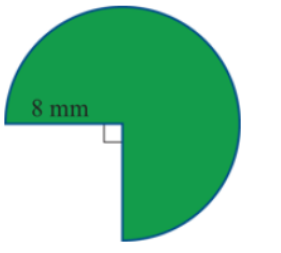
B. $x = 22.5, \quad y = 5.5$

C. $x = 17.5, \quad y = -9.5$

D. $x = -7.5, \quad y = -11.5$

E. $x = 14.5, \quad y = 6.5$

54. Find the perimeter and area of the following diagram.



A. P = $12\pi + 16$ A = 48π

B. P = 12π A = 64π

C. P = $16\pi + 16$ A= 32π

D. P = $12\pi + 64$ A= 32π

E. None of the above

55. Which of the following is not the same as 55 x 19?

A. 1045

B. 55 x 18 + 55

C. 50 x 19 + 5 x 19

D. 500 + 50 + 450 + 45

E. 55 x 20 – 1

56. 3, -6, 12, -24, ?

A. 18

B. 32

C. 36

D. 48

E. 54

57. Five bananas are worth the same as three apples and six oranges. How many apples and oranges can you trade for 25 bananas?

A. 15 apples and 30 oranges

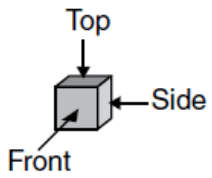
B. 10 apples and 20 oranges

C. 25 apples and 30 oranges

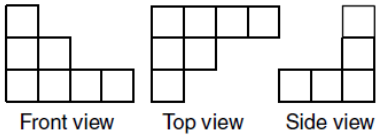
D. 30 apples and 15 oranges

E. 12 apples and 24 oranges

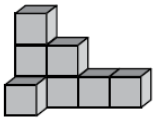
58. Views are made from three directions.

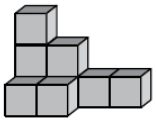


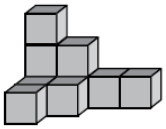
Here are three views of a model.

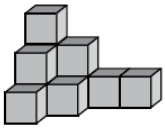


Which one of the these is the model?

A 

B 

C 

D 

E. None of the above.

59. $0.4^3 = ?$

A. 0.064
B. 0.64
C. 6.4
D. 640
E. 0.12

60. When it is 8:20 am in New Delhi it is 4:50 am on the same day in Johannesburg. What time will it be in Johannesburg when it is 1:40 pm in New Delhi?

A. 5:10am
B. 9:10am
C. 10:10am
D. 11:10am
E. 10:20am