SST6 Mathematics (ACER)

Test 16

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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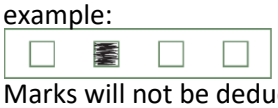
Advice for the test:

- 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:



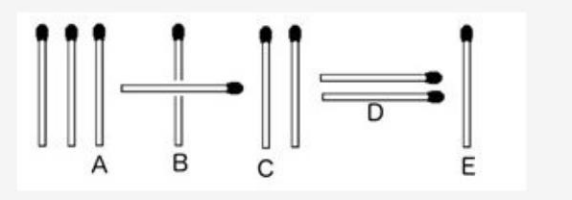
- Marks will not be deducted for incorrect answers.
- No mark will be given if more than ONE answer is completed for any question.
- If you make a mistake, ERASE the incorrect answer – DO NOT cross it out.

1. Which fraction is halfway between $\frac{1}{5}$ and $\frac{1}{6}$?
   A. $\frac{1}{7}$
   B. $\frac{1}{56}$
   C. $\frac{1}{11}$
   D. $\frac{11}{60}$
   E. $\frac{11}{30}$

2. Which answer would give the smallest number?
   A. 111 divided by 11
   B. 110 divided by 10
   C. 109 divided by 9
   D. 108 divided by 8
   E. 107 divided by 7

3. To make one banana and grape smoothie, one banana and 50 grams of grapes are needed. Josh has 5 bananas and 0.5 kg of grapes. How many smoothies can he make?
   A. 1
   B. 3
   C. 5
   D. 10
   E. 15

4. Which matchstick should be removed to make the equation correct?



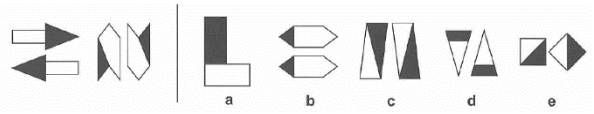
   A. A
   B. B
   C. C
   D. D
   E. E

5. 0.01 x _____ = 0.9
   A. 0.9
   B. 9%
   C. 90%
   D. 900%
   E. 9000%

6. Emily has been working on using mental strategies to speed up her calculations. In terms of 201-99, which of the following mental strategy is incorrect?
   A. 200+1-99
   B. 201-100+1
   C. 199-99+2
   D. 200+1-100+1
   E. 200+1-100-1

7. Mr. Liu's watch is 15 minutes slow. If he needs to catch the bus which arrives at 11: 25 am and it takes him 5 minutes to walk to the bus station, when does Mr. Liu need to leave at his own watch's time?
   A. 11:05
   B. 11:10
   C. 11:15
   D. 11:20
   E. 11:35

8. In the question below there are two figures that are like each other in some way. Find which of the five figures on the right is most like the two figures on the left.



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

9. 0.5, $\frac{2}{3}$, 75%, 0.8, ?
   A. 0.9
   B. $\frac{7}{8}$
   C. $\frac{5}{6}$
   D. 1.2
   E. $\frac{6}{7}$

10. 0.95km=_____m=_____cm
    A. 95 m and 9500 cm
    B. 95 m and 95000 cm
    C. 950m and 95000 cm
    D. 0.00095 m and 0.0095 cm
    E. 95000 m and 9500 000 cm

11. Which of the following number is odd from others?
    A. 1500
    B. 1050
    C. 3555
    D. 4565
    E. 4560

12. Five racing cars recorded as below these times for one lap of a track. Which car had the fastest time?

Car1	Car2	Car3	Car3	Car4
3:19.0 567	3:21.0 854	3.22.0 003	3.19.0 459	3.21.0 032

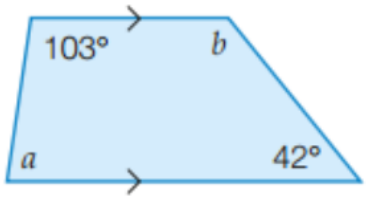
    A. Car1
    B. Car2
    C. Car3
    D. Car4
    E. Car5

13. Find the missing values

x	-2	-1	0	1	2	3
y	@	0	-3	&	-9	-12

    A. @=3, &= - 6
    B. @=9, &= 12
    C. @= -3, &= - 6
    D. @= 3, &= -7
    E. None of the above

14. Find the value of pronumerals in the following shape.



    A. a=42 degrees, b = 103 degrees
    B. a=42 degrees, b = 138 degrees
    C. a=103 degrees, b = 42 degrees
    D. a=77 degrees, b = 103 degrees
    E. a=77 degrees, b = 138 degrees

15. Which of the following equation does not have a solution of $x = 25$?
    A. $\sqrt{x} = 5$
    B. $2x - 1 = 49$
    C. $5x = 100 \div 2$
    D. $5^2 = x$
    E. $\frac{6x-3}{3} - 49 = 0$

16. Which statements are true?
    (a) All squares are rectangles.
    (b) All parallelograms are quadrilaterals.
    (c) The diagonals of a parallelogram bisect each other at right angles.
    (d) All rhombuses are parallelograms.
    (e) The sum of all interior angles of some quadrilaterals may exceed 360 degrees.

    A. (a) and (b)
    B. (a) and (b) and (d)
    C. (b) and (c) and (d)
    D. (b) and (d) and (e)
    E. (c) and (d) and (e)

17. Danny is walking in a park and sees some people walking their dogs. In total, Danny sees 18 heads and 58 legs. How many people and dogs are there respectively?
    A. 7 people and 11 dogs
    B. 8 people and 10 dogs
    C. 9 people and 9 dogs
    D. 10 people and 8 dogs
    E. 11 people and 7 dogs

18. The sum of two prime numbers is 30. The number cannot be:
    A. 7 and 23
    B. 11 and 19
    C. 13 and 17
    D. 27 and 3
    E. None of the above

Questions 19 and 20 are based on the following graph.
The minimum and maximum temperatures recorded at Melbourne during one week were:

Day	Maximum (°C)	Minimum (°C)
Monday	19	-3
Tuesday	16	-7
Wednesday	22	0
Thursday	20	-1
Friday	23	2
Saturday	20	-2
Sunday	18	-4

19. One which day was the lowest minimum recorded?
    A. Monday
    B. Tuesday
    C. Thursday
    D. Saturday
    E. Sunday

20. Which day had the greatest difference between the minimum and the maximum?
    A. Monday
    B. Tuesday
    C. Sunday
    D. Both Saturday and Sunday
    E. Both Tuesday and Thursday

21. What is the sum of 1, 2, 3, …, 98, 99, 100?
    A. 4500
    B. 5000
    C. 5050
    D. 11500
    E. 15050

22. What is the mean number of 1, 2, 3, …, 98, 99?
    A. 39.5
    B. 49
    C. 49.5
    D. 50
    E. 51

23. Mrs. Smith bought toy cars for $50 and sold them for $74. What is the mark-up, as a percentage?
    A. 2.4%
    B. 24%
    C. 4.8%
    D. 48%
    E. 148%

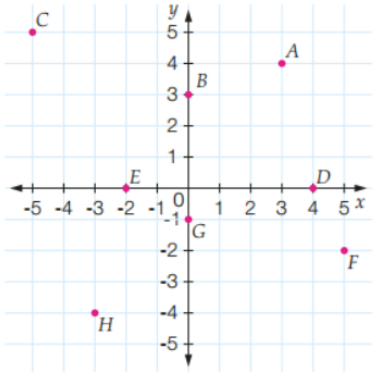
24. $(-8) \times 3 - (-12) =$
    A. -12
    B. -24
    C. 12
    D. 24
    E. 36

25. Anaya decided to donate 1/3 of 2/5 of her pocket money to a charity. Given that she has $180 pocket money, how much will she donate?
    A. $ 18
    B. $ 24
    C. $ 36
    D. $ 48
    E. $ 64

26. Leo travels at an average speed of 80km/h from Melbourne to Bendigo and needs to arrive at 8:00 am on Friday. The distance between Leo's home to Bendigo is around 200 km and he plans to take a half-hour break in between. When at least does he need to depart from home?
    A. 4:30 am on Thursday
    B. 5:00 am on Friday
    C. 5:00 am on Thursday
    D. 5:30 am on Friday
    E. 5:30 am on Thursday

27. Hailey makes candles. For every candle she uses 1 jar (j), 2 wicks (w) and 60 g of candle wax (c). Which of the following expression describe the cost of making 1 candle?
    A. j+w+c+60
    B. 1+2w+60
    C. 60 x c +1
    D. (w+w+60)x1
    E. j+2w+60c

28. Write the coordinates of the points B and D shown on the Cartesian plane below and state the quadrant in which A and C are located.



A. B (3, 0), D (0, 4); A is in the 1st quadrant and C is in the 4th quadrant.
B. B (3, 0), D (4, 0); A is in the 1st quadrant and C is in the 2nd quadrant.
C. B (0, 3), D (4, 0); A is in the 1st quadrant and C is in the 2nd quadrant.
D. B (0, 3), D (4, 4); A is in the 1st quadrant and C is in the 2nd quadrant.
E. B (3, 0), D (0, 4); A is in the 2nd quadrant and C is in the 3rd quadrant.

29. The actual distance from Canberra to Sydney is approximately 300 km. The scale on a map is 1cm: 25 km. What is the distance between Canberra and Sydney on this map?
A. 9cm
B. 10cm
C. 11.5cm
D. 12cm
E. 15cm

30. Find the missing values.

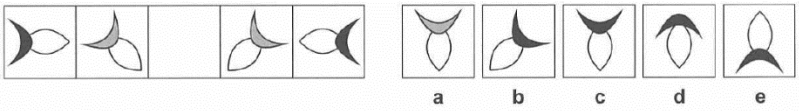
10	3	8
5	?	9
6	11	*

A. ?=7, *=5
B. ?=7, *=4
C. ?=4, *=7
D. ?=4, *=13
E. ?=2, *=14

31. Which unit of area would be the most appropriate for measuring the area of a dinner plate and a national park respectively?
A. cm^2 for a dinner plate and m^2 for a national park
B. mm^2 for a dinner plate and km^2 for a national park
C. cm^2 for a dinner plate and m^2 for a national park
D. mm^2 for a dinner plate and km^2 for a national park
E. cm^2 for a dinner plate and km^2 for a national park

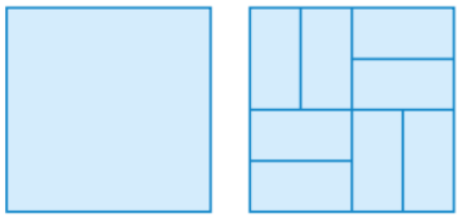
32. A certain number of students have been surveyed on how they travel to school. The chance of selecting a student who either cycles or walks to school is 2/5 and there are 20 students who cycle to school and 60 students who walk to school. How many students have been surveyed in total?
A. 50
B. 150
C. 200
D. 250
E. 300

33. Find the next diagram in the following sequence.



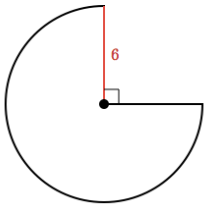
A. A
B. B
C. C
D. D
E. E

34. The perimeter of this square paddock is 800m. It is divided into eight identical paddocks as shown. The perimeter, in metres, of each of the eight smaller paddocks is



A . 100
B . 250
C . 300
D . 300
E . 400

35. Which of the following correctly calculates the area of the shape shown?



A. $4(\pi \times 6^2) - (\pi \times 6^2)$
B. $\pi \times 12^2$
C. $3/4 \times \pi \times 12^2$
D. $\frac{\pi \times 6^2}{4} \times 3$
E. $\pi \times 6^2 - 36$

36. 2 out of 80 students exercised more than 10 hours a week. What percentage of students exercised more than 10 hours a week?
A. 0.025%
B. 1.25%
C. 2.5%
D. 4%
E. 40%

37. A triangle has an area of 36 cm^2 and a height of 18. Find one side of its bases.
A. ½
B. 2
C. 4
D. 6
E. 8

38. A town has 5000 residents, of whom 60% voted in a local council election. The result was that, of those who voted, 32% for Qingqing and 31% for Rishika and the rest voted for Patrick. Under the voting system, Patrick was elected. The number of residents who voted for Patric was?
A. 1859
B. 1110
C. 960
D. 930
E. 700

39. Evaluate $0.2^2 - 0.2^3$=
A. 0.032
B. 0.32
C. 0.056
D. – 0.56
E. – 0.2

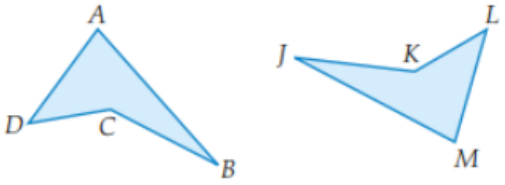
40. The graph shows the number of houses built in Forest Hill over 4 years. From 2009 to 2010 the number increased by 200. How many houses were built in 2008 and 2007 respectively?

Year	Number of new houses built
2010	
2009	
2008	
2007	

A. 2008: 200 houses; 2007: 480 houses
B. 2008: 250 houses; 2007: 480 houses
C. 2008: 200 houses; 2007: 500 houses
D. 2008: 200 houses; 2007: 480 houses
E. 2008: 250 houses; 2007: 500 houses

41. The chance of picking a red Queen from a standard deck of playing cards is
A. 1/52
B. 1/26
C. 4/52
D. 4/26
E. 1/50

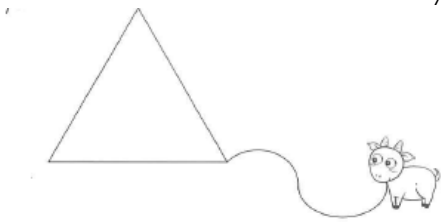
42. The following figures are congruent to each other, therefore $\angle ADC = ?$



A. $\angle DCB$
B. $\angle JML$
C. $\angle JKL$
D. $\angle KLM$
E. $\angle LKJ$

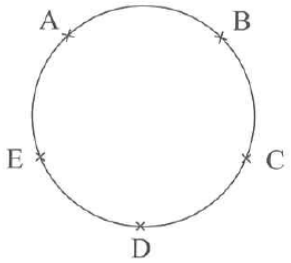
43. $0.9m^3 =$ _____L
A. 9000L
B. 900L
C. 90L
D. 9L
E. 0.9L

44. A goat is tied using a rope to a triangular fence as shown. Given that each side of the triangle is 17.5m and the length of the rope is 21m, find the area of the region in which the goat can move freely. (Take $\pi = \frac{22}{7}$)



A. $1386cm^2$
B. $1216.5cm^2$
C. $1180.7cm^2$
D. $1155cm^2$
E. $1074.6cm^2$

45. There are five dots on the circumference of a circle. By connecting three dots, how many different triangles can you make?



A. 5
B. 7
C. 10
D. 20
E. 60

46. A special type of password consists of four different letters of the alphabet, where each letter is used only once. How many different possible passwords are there?
A. 4^{26}
B. $456\,976$
C. 358 880
D. 260 000
E. 14950

47. There are 15 students in a class in Top Scope College. 3 students are needed to give a presentation and orientation tour to new students. How many ways are there to choose 3 students from 15?
A. 45
B. 150
C. 450
D. 455
E. 2730

48. Find the value of a+b+c if the number 173a is divisible by 9, 173b is divisible by 11 and 173c is a multiple of 6.
A. 15
B. 16
C. 19
D. 20
E. 21

49. A cashier checks the price of a lamp that is marked $18, because it usually rings up at $72. What is the discount as a percentage?
    A. 18%
    B. 25%
    C. 40%
    D. 75%
    E. 80%

50. Lavnia deposited $1000 in a savings account earning 10% interest, compounded annually. To the nearest dollar, how much will she have in two years?
    A. $1100
    B. $1200
    C. $1210
    D. $2000
    E. $2110

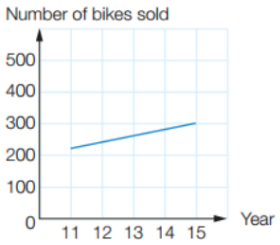
51. $3\frac{2}{3} \times 2\frac{1}{5} =$
    A. $6 + \frac{2}{3} \times \frac{1}{5} + \frac{2}{3} \times 2 + 3 \times \frac{1}{5}$
    B. $6 + \frac{2}{3} \times \frac{1}{5} + \frac{2}{3} \times 3 + 2 \times \frac{1}{5}$
    C. $3 + 2 + \frac{2}{3} \times \frac{1}{5}$
    D. $\frac{11}{3} \times 2 + \frac{1}{5}$
    E. $\frac{2}{3} \times 2\frac{1}{5} + 6$

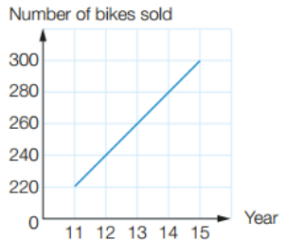
52. Write $7 \times 7 \times 7 \times 7 \times 8 \times 8$ in indice form
    A. $7^4 \times 8 \times 2$
    B. $7^4 \times 8^2$
    C. $7 \times 7 \times 7 \times 7 \times 8^2$
    D. $(7 \times 8)^4$
    E. $(7 \times 8)^2$

53. The median number of the set {3, 2, 1, 4, 0} is
    A. 0
    B. 1
    C. 2
    D. 3
    E. 4

54. The mode number for {a, 7, 5, 9, 4, 3, 11, 19, 6} is 4. What is the value of a?
    A. 3
    B. 4
    C. 5
    D. 11
    E. 19

55. The graph on the left represents the sales information of Company L and the one on the right represents the sales information of company R. Decide which of following statement is correct.





    A. Company R's sales of cars saw a stronger increase than Company L, as the line was steeper.
    B. Company L's sales of cars saw a stronger increase than Company R, as the line was flatter.
    C. Company L and R had the same increase rate in terms of numbers of bikes sold.
    D. In 2016, Company L sold 350 bikes.
    E. In 2011, Company R sold less than 200 bikes.

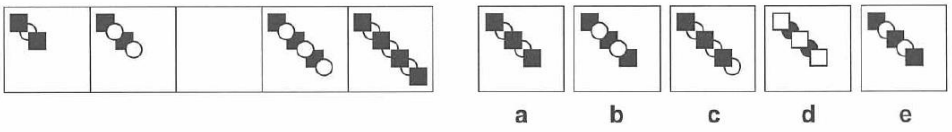
56. 225%=_____(decimal)=_____(fraction in the simplest form)
    A. 0.225 $\frac{125}{100}$
    B. 0.225 $\frac{9}{4}$
    C. 2.25 $\frac{45}{20}$
    D. 0.0225 $\frac{45}{20}$
    E. 2.25 $\frac{9}{4}$

57. The perimeter of a square which has an area of 81 m^2 is
    A. 9m
    B. 18m
    C. 36m
    D. 81m
    E. 324m

58. The length of a cube has been tripled. How many times larger is the new surface area than that of the previous one and how about the volume?
    A. The surface area is 3 times larger than the old one and the volume is 9 times larger than the old one.
    B. The surface area is 6 times larger than the old one and the volume is 9 times larger than the old one.
    C. The surface area is 9 times larger than the old one and the volume is 27 times larger than the old one.
    D. The surface area is 9 times larger than the old one and the volume is 9 times larger than the old one.
    E. None of the above

59. The average of four consecutive prime number is 105. Find the distance between the smallest value and the largest value.
    A. 7
    B. 8
    C. 9
    D. 11
    E. 15

60. Find which diagram is missing for the following sequence.



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