SST6 Mathematics (ACER)

Simulation Test 20

Test Code: SST6M20

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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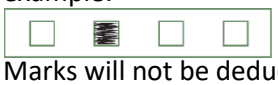
Advice for the test:

- 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. Using $a^2 - b^2 = (a + b)(a - b)$,
   $16^2 - 12^2$ =
   A. 4
   B. 28
   C. 112
   D. 162
   E. 264

2. A bag contains three red marbles numbered 1 to 3, five green marbles numbered 4 to 8, and two yellow marbles numbered 9 and 10. A single marble is withdrawn at random. Find the probability that the number is yellow and a factor of 90.
   A. $\frac{1}{10}$
   B. $\frac{1}{5}$
   C. $\frac{1}{2}$
   D. $\frac{1}{12}$
   E. $\frac{3}{10}$

3. 7920 min = _____days
   A. 4 and a half days
   B. 4.33 days
   C. 4 days and 3 hours and 10 minutes
   D. 5 days
   E. 5 and a half days

4. 6(a+3b)=
   A. 6a + 3b
   B. 6a + 63b
   C. 18ab
   D. 6a3b
   E. 6a + 18b

5. Another way of writing 7^4 is:
   A. 4 x 4 x 4 x 4 x 4 x 4 x 4
   B. 7 x 7 x 7 x 7 x 4 x 4 x 4 x 4
   C. 7 x 4
   D. 7 x 7 x 7 x 7
   E. 7 x 4 x 4 x 4

6. -6 – (-6) + (-5) – (3) =
   A. -2
   B. 2
   C. -16
   D. -20
   E. -8

7. Daniel is awake for 16 hours of the day. Each day, his parents tell him to drink 1 litre of water. If he drinks the same amount every hour, how much does he drink every hour?
   A. 0.0625L
   B. 0.0875L
   C. 0.875L
   D. 0.036L
   E. 0.0525L

8. To sign up and pay for the local gym, one needs to pay an initial joining fee and then payments every week for as long as the gym subscription lasts. Which formula shows how to calculate the total cost for n weeks, where n is any number?
   A. Joining fee + weekly fee + n
   B. Joining fee + weekly fee x n
   C. (Joining fee + weekly fee) x n
   D. Joining fee + weekly fee + 12 x n
   E. Joining fee/12 + weekly fee + n

9. The average height of three students is 140cm. Two new students join the class, and the average height of the 5 students is now 146cm. What is the average height of just the two new students?
   A. 144cm
   B. 148cm
   C. 151cm
   D. 155cm
   E. 161cm

10. Which of the following number is a prime number?
    A. 49
    B. 51
    C. 57
    D. 61
    E. 63

11. The Student Council at a school conducted a survey of waiting time at the canteen. This table shows the waiting time for 183 students.

Waiting time (minutes)	Number of students
0–<2	8
2–<4	26
4 –<6	59
6 –<8	46
8 –<10	35
10 –<12	4
12 –<14	3
14–<16	2

What has the greatest chance of occurring?

A. A waiting time between 0-4 minutes
B. A waiting time between 4-6 minutes
C. A waiting time between 6-8 minutes or 10-14 minutes
D. A waiting time over 8 minutes
E. A waiting time under 6 minutes

12. Tahlia wanted to buy a volleyball from the shops, but she wanted it delivered. The delivery cost of any item is 15% of the item price, and the volleyball costs $32. How much did Tahlia have to pay in total?

A. $34.2
B. $35.2
C. $36.8
D. $37.6
E. $39.2

13. Sammy's family is hosting a barbeque. A recipe says to use 1.4 kg of beef mince to make 8 burgers. If there will be 20 people attending, how much beef mince will be used?

A. 3500g
B. 3650g
C. 3800g
D. 4200g
E. 4400g

14. The sum of 4 consecutive prime numbers is 184. Find the difference between the middle two numbers.

A. 2
B. 3
C. 4
D. 6
E. 7

15. 0.01 x 0.8 =

A. 0.008
B. 8.0
C. 0.08
D. 0.018
E. 0.0008

16. James' new watch is faulty and is 5 minutes slow. If he needs to leave the house 15 minutes before catching his train at 10:10am, what time will his watch show as he leaves the house?

A. 9:50am
B. 9:55am
C. 10:00am
D. 10:10am
E. 10:15am

17. 9 people take a test. Their scores out of 100 are: 56, 79, 77, 48, 90, 68, 79, 92, 71. What is the difference between the median and the mode?

A. 2
B. 5
C. 8
D. 11
E. 12

18. 9 people take a test. Their scores out of 100 are: 56, 79, 77, 48, 90, 68, 79, 92, 71. What is the mean, to 1 decimal place?

A. 72.4
B. 73.3
C. 75.2
D. 75.4
E. 77.3

19. The total volume of a cube is 1331 square centimetres. Find the sum of the lengths of its edges.

A. 111 cm
B. 121 cm
C. 132 cm
D. 144 cm
E. 150 cm

20. The solution to the equation $5 = \frac{3x+3}{3}$ is:

A. x = 4
B. x = 5
C. x = 5.5
D. x = 6
E. x = 6.5

21. 12^4 is equivalent to:
    A. 12 x 4
    B. 4 x 12 x 12 x 12 x 12
    C. $(12 + 4)^3$
    D. $(12/4)^{16}$
    E. 144 x 144

22. If January 15 is a Friday in 2021, what day of the week will August 12 in 2022 be?
    A. Monday
    B. Tuesday
    C. Wednesday
    D. Thursday
    E. Friday

23. $\sqrt{75}$ is closest to:
    A. 8
    B. 8.25
    C. 8.5
    D. 8.75
    E. 9

24. Stacy wants to achieve an average of 95% over her maths test this year. Her first four scores were 99, 93, 95 and 89. What is the lowest score she can get on her fifth test to achieve this average?
    A. 97%
    B. 98%
    C. 99%
    D. 100%
    E. Impossible to reach

25. Jonathan, Viela and Keshav have won a group prize worth $480, to be split in a ratio of 1:3:4 respectively. How much less does Jonathan get compared to Keshav?
    A. $160
    B. $180
    C. $200
    D. $220
    E. $240

26. Which of these is in simplest form?
    A. $\frac{3}{36}$
    B. $\frac{3}{57}$
    C. $\frac{11}{45}$
    D. $\frac{7}{56}$
    E. $\frac{4}{22}$

27. 225% of a number is 180. What is 140% of the same number?
    A. 112
    B. 120
    C. 124
    D. 128
    E. 136

28. Which of the following lengths cannot make a triangle?
    A. 11, 12, 24
    B. 3, 4, 5
    C. 7, 24, 26
    D. 8, 16, 23
    E. 14, 15, 25

29. Which following shape typically has one pair of parallel sides?
    A. Kite
    B. Rhombus
    C. Rectangle
    D. Trapezium
    E. Square pyramid

30. 3.7 x 10^5 = ?
    A. 37 000
    B. 370 000
    C. 3 700
    D. 18 500
    E. 185 000

31. What is the square of $3\frac{1}{4}$
    A. $10\frac{9}{16}$
    B. $9\frac{1}{16}$
    C. $9\frac{1}{2}$
    D. $6\frac{1}{2}$
    E. $9\frac{3}{4}$

32. Which of these units is best for measuring the width of a road?
    A. mm
    B. cm
    C. m
    D. cm^2
    E. km

33. The obtuse angle between the hands of a clock at 5 o'clock is:
    A. 110°
    B. 120°
    C. 135°
    D. 150°
    E. 160°

34. How many square centimetres are there in a rectangular carpet measuring 4 metres by 0.75 metres?
    A. $30cm^2$
    B. $300cm^2$
    C. $3\ 000cm^2$
    D. $30\ 000cm^2$
    E. $300\ 000cm^2$

35. A train set out at midday from Geelong and travelled to Flinders Street station, 80 kilometres away. It drove at 90km/h but encountered a railway issue at 12:30pm and had to stop. After being fixed at 12:45pm, what speed would it have to travel at to arrive by 1:05pm?
    A. 95 km/h
    B. 100km/h
    C. 105km/h
    D. 110km/h
    E. 115km/h

36. What are the prime factors of 240?
    A. $2^4 \times 3 \times 5$
    B. $2^3 \times 3^2 \times 4$
    C. $2^4 \times 3^2 \times 4$
    D. $2^2 \times 3^3 \times 5^2$
    E. $2^3 \times 3 \times 5^2$

37. 2 fair die are tossed. What are the chances that I have 2 odd numbers?
    A. 0.5
    B. 0.3
    C. 40%
    D. 25%
    E. none of the above

38. How many more factors does 108 have compared to 112?
    A. 2
    B. 4
    C. 6
    D. 8
    E. 10

39. Joshua is 15 years older than Helina. If 5 years ago, Joshua was 3 times as old as Helina, then find Joshua's present age.
    A. 23 years
    B. 25 years
    C. 27.5 years
    D. 30 years
    E. 32.5 years

40. A road is 4800m long. There are trees planted every 5 metres, with trees planted at the start and end of the road. How many trees are there?
    A. 800
    B. 891
    C. 961
    D. 1001
    E. 1080