

AEIS Secondary 1

Mathematics

PRACTICE TEST SET 1

Section	Marks Allocated	Score
PART 1		
Multiple-choice questions	34	
PART 2		
Short-answer questions	21	
Open-ended questions	45	
Total	100	

Name:

Date:

Name: _____

Subject: _____

Index Number: _____

**OPTICAL
ANSWER
SHEET**

INSTRUCTIONS

- Use ONLY a pencil (e.g. 2B) to shade your answer.
- Shade only ONE answer for each question.
- Shade the bubble completely.
- Use only a soft eraser to erase any error or stray mark completely.
- Do not make any stray mark on this sheet.
- Do not fold or staple this sheet.

**VERIFICATION OF PERSONAL
PARTICULARS
(FOR CANDIDATE'S USE ONLY)**

- Check that your printed particulars are correct.
- Write your name above the line if your particulars are correct. Otherwise, inform the invigilator.

Candidate's Name

INSTRUCTIONS

If you think '1' is the correct answer to Question 1, shade the bubble as follows:

1  (2) (3) (4)

1	(1)	(2)	(3)	(4)
2	(1)	(2)	(3)	(4)
3	(1)	(2)	(3)	(4)
4	(1)	(2)	(3)	(4)
5	(1)	(2)	(3)	(4)
6	(1)	(2)	(3)	(4)
7	(1)	(2)	(3)	(4)
8	(1)	(2)	(3)	(4)
9	(1)	(2)	(3)	(4)
10	(1)	(2)	(3)	(4)
11	(1)	(2)	(3)	(4)
12	(1)	(2)	(3)	(4)
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16	(1)	(2)	(3)	(4)
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18	(1)	(2)	(3)	(4)

19	(1)	(2)	(3)	(4)
20	(1)	(2)	(3)	(4)
21	(1)	(2)	(3)	(4)
22	(1)	(2)	(3)	(4)
23	(1)	(2)	(3)	(4)
24	(1)	(2)	(3)	(4)
25	(1)	(2)	(3)	(4)
26	(1)	(2)	(3)	(4)
27	(1)	(2)	(3)	(4)
28	(1)	(2)	(3)	(4)
29	(1)	(2)	(3)	(4)
30	(1)	(2)	(3)	(4)
31	(1)	(2)	(3)	(4)
32	(1)	(2)	(3)	(4)
33	(1)	(2)	(3)	(4)
34	(1)	(2)	(3)	(4)
35	(1)	(2)	(3)	(4)
36	(1)	(2)	(3)	(4)

37	(1)	(2)	(3)	(4)
38	(1)	(2)	(3)	(4)
39	(1)	(2)	(3)	(4)
40	(1)	(2)	(3)	(4)
41	(1)	(2)	(3)	(4)
42	(1)	(2)	(3)	(4)
43	(1)	(2)	(3)	(4)
44	(1)	(2)	(3)	(4)
45	(1)	(2)	(3)	(4)
46	(1)	(2)	(3)	(4)
47	(1)	(2)	(3)	(4)
48	(1)	(2)	(3)	(4)
49	(1)	(2)	(3)	(4)
50	(1)	(2)	(3)	(4)

PART 1: Multiple-choice questions (30 minutes)

Read each question carefully. Choose the correct answer and shade the number (1, 2, 3 or 4) in the Optical Answer Sheet. Each question carries 1 mark.

1. Which of the following is eight hundred and eighteen thousand and fourteen in numerals?
(1) 18 014 (2) 80 014 (3) 818 014 (4) 818 140
2. $60\,000 \div 200 = \underline{\hspace{2cm}} \times 5$
(1) 6 (2) 60 (3) 600 (4) 6000
3. The common factors of 12, 16 and 28 are .
(1) 1, 2 and 4 (2) 1, 4 and 6 (3) 2 and 4 (4) 4 and 6
4. $\left(3 + 1\frac{1}{3} \times 4\frac{1}{2}\right) - \left(5\frac{3}{4} - 4\frac{2}{5} \div 1\frac{1}{10}\right) = \underline{\hspace{2cm}}$
(1) $6\frac{1}{4}$ (2) $7\frac{1}{4}$ (3) $8\frac{1}{8}$ (4) $9\frac{3}{8}$
5. Which of the following is the same as 7.09 litres?
(1) 7009 ml (2) 7090 ml (3) 7 ℓ 900 ml (4) 70 ℓ 90 ml
6. What is 0.2% of 20 m?
(1) 0.004 m (2) 0.04 m (3) 0.4 m (4) 4 m
7. Simplify $20m - 4m + 2m \div 2 - 2m$.
(1) $7m$ (2) $9m$ (3) $15m$ (4) $17m$
8. A high-speed train can travel 180 km/h. How many metres can the train travel in 25 minutes?
(1) 75 (2) 4500 (3) 45 000 (4) 75 000

A number sequence is shown below. Answer Questions 9 and 10.

7, 3, 2, 1, 5, 7, 3, 2, 1, 5, 7, 3, 2, ...

9. What is the sum of the first 123 numbers?
(1) 442 (2) 443 (3) 444 (4) 445
10. What is the 138th number?
(1) 7 (2) 5 (3) 3 (4) 2

Some years ago, 1 January was a Thursday. Answer Questions 11 and 12.

11. On which day of the week was 1 April in that year?

[Note: Take February to have 28 days in that year.]

(1) Monday (2) Tuesday (3) Wednesday (4) Thursday

12. Today is Friday. On which day of the week will it be 121 days later including today?

(1) Saturday (2) Sunday (3) Monday (4) Tuesday

13. Find the remainder and the last digit of the quotient when $333 \dots 333 \div 7$.

19 3s

(1) Remainder = 0
Last digit = 3

(3) Remainder = 2
Last digit = 1

(2) Remainder = 1
Last digit = 2

(4) Remainder = 3
Last digit = 0

14. A number, $\underbrace{55 \dots 55}_{20 \text{ 5s}} a \underbrace{99 \dots 99}_{20 \text{ 9s}}$, is divisible by 7. Find the value of a .

[Hint: Each block of 555 555 and 999 999 is divisible by 7.]

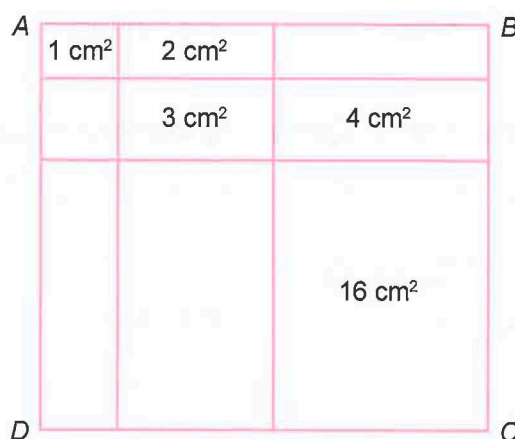
(1) 5 (2) 6 (3) 7 (4) 8

15. What is the largest 3-digit number such that the remainder is 2 when it is divided by 7 and the remainder is 4 when it is divided by 9?

(1) 936 (2) 938 (3) 940 (4) 942

16. A big rectangle $ABCD$ is divided into 9 smaller rectangles as shown. The areas of some of the rectangles are given. Find the perimeter of $ABCD$.

[Note: A square is a special rectangle.]



(1) $28\frac{1}{3}$ cm (2) $28\frac{2}{3}$ cm (3) $29\frac{1}{3}$ cm (4) $29\frac{2}{3}$ cm

17. Find the sum of the number pattern below.

1	2	3	4	...	...	...	50
2	3	4	5	...	...	...	51
3	4	5	6	...	...	...	52
...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...
50	51	52	53	...	...	...	99

18. What is the 1000th term in the series of fractions?

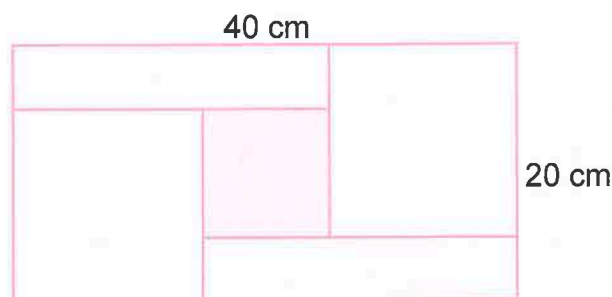
$\frac{1}{1}, \frac{1}{2}, \frac{2}{2}, \frac{1}{3}, \frac{2}{3}, \frac{3}{3}, \frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \frac{4}{4}, \dots$

19. The sum of the digits of a two-digit number is multiplied by 8. The result is 8 more than the number. Find the two-digit number.

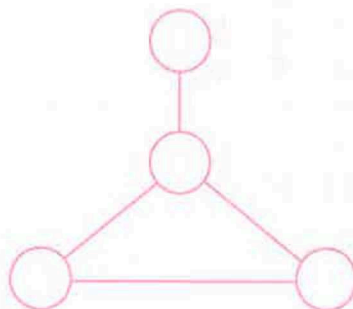
20. James' age in 2008 was the sum of all the digits of his year of birth. How old was James in 2008?

21. 3 pieces of item A, 7 pieces of item B and 1 piece of item C in a toy set cost \$31.50. 4 pieces of item A, 10 pieces of item B and 1 piece of item C in the same set cost \$42. Find the price of item A + item B + item C.

22. A rectangle has a length of 40 cm and a breadth of 20 cm. It is cut into 2 identical squares, 2 identical rectangles and a shaded small square. Find the area of the shaded square.

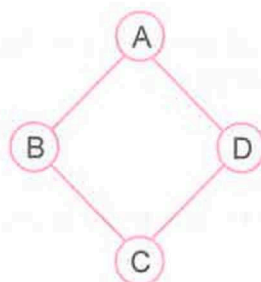


23. How many ways are there to colour the circles using 3 different colours so that no two circles joined by a line have the same colour?



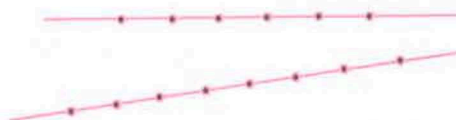
- (1) 9 (2) 10 (3) 11 (4) 12

24. Four circles shown below are connected by lines. Each circle is to be coloured using either yellow, black or red. How many ways are there to colour the four circles if no two circles connected by a line can have the same colour?



- (1) 15 (2) 16 (3) 17 (4) 18

25. The two lines shown below have 8 points and 6 points on them.



How many triangles can be formed using any of these 3 points as their vertices?

- (1) 284 (2) 286 (3) 288 (4) 230

26. How many three-digit odd numbers can be formed using the digits 1, 3, 6, 7 and 8? Each digit can only be used once in every number.

- (1) 36 (2) 37 (3) 38 (4) 39

27. The average of eight numbers is 29. The average of the first five numbers is 26. The average of the last four numbers is 31. Find the fifth number.

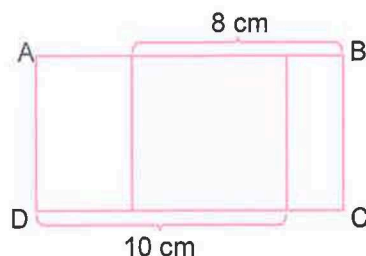
- (1) 22 (2) 23 (3) 24 (4) 25

28. The sum of a , b and c is 14.

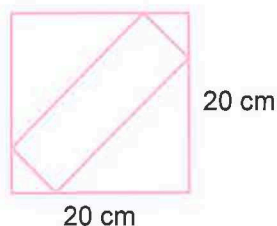
If $9a + 8b + 6c = 101$, what is the value of $2a + b - c$?

- (1) 5 (2) 6 (3) 3 (4) 4

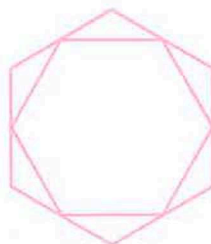
29. In the figure below, the shaded region is a square. Find the perimeter of rectangle ABCD.



- (1) 30 cm (2) 32 cm (3) 34 cm (4) 36 cm
30. Compute $333\,333 \times 333\,333$.
- (1) 111 110 888 887 (3) 111 110 888 889
(2) 111 110 888 888 (4) 111 110 888 890
31. Compute $1 + 11 + 111 + 1111 + \dots + 111\,111\,111$.
- (1) 111 222 333 (3) 112 233 445
(2) 123 456 788 (4) 123 456 789
32. Compute $8 + 88 + 888 + \dots + 888\,888\,888$.
- (1) 887 766 554 (3) 876 543 210
(2) 987 654 320 (4) 987 654 321
33. In the figure below, a rectangle is embedded in a square. Each side of the square is 20 cm long. The four vertices of the rectangle lie in such a way that the length is thrice that of the breadth. Find the area of the rectangle.



- (1) 148 cm^2 (2) 150 cm^2 (3) 152 cm^2 (4) 154 cm^2
34. The figure shows two regular hexagons. Each vertex of the small hexagon lies on the midpoint of the side of the big hexagon. It is known that the area of the small hexagon is 60 cm^2 . Find the area of the big hexagon.

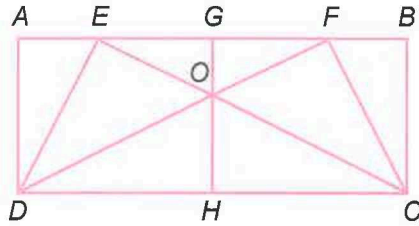


- (1) 76 cm^2 (2) 78 cm^2 (3) 80 cm^2 (4) 82 cm^2

PART 2: Short-answer and open-ended questions (1 hour 45 minutes)

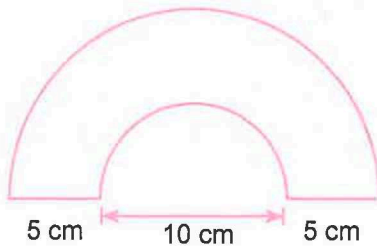
Questions 1 to 21 carry 1 mark each and Questions 22 to 36 carry 3 marks each. Show all workings clearly in the spaces provided. Marks will be given for working shown.

1. In the diagram below, $ABCD$ is a rectangle. DE , CE , DF , FC and GH are straight lines. The ratio of GO to OH is $1 : 3$. Find the ratio of the area of $ABCD$ to the area of DFC to the area of DOC .



Ans: _____ : _____ : _____

2. A piece of wire is bent to form two semicircles as shown below. Find the length of the wire used. (Take $\pi = 3.14$)



Ans: _____

3. List all the common factors of 18 and 42.

Ans: _____

4. Find the value of $2 - \frac{2}{3} - 0.25$.

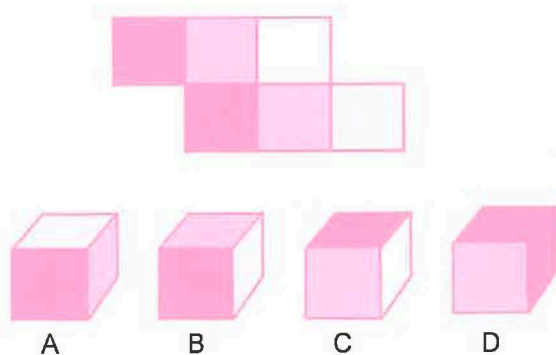
Give your answer as a mixed number in the simplest form.

Ans: _____

5. Three men drove from Town *E* to Town *G*. Sam drove $\frac{4}{7}$ of the total distance while Mike drove 43 km less than Sam. Tom drove the remaining 19 km. What was the total distance travelled by the three men?

Ans: _____

6. Which one of the following cubes is most likely to be formed from this net?



Ans: _____

7. Write down all the common multiples of 3 and 4 that are smaller than 25.

Ans: _____

8. Find the sum of $\frac{5}{7}$ and 4 tenths.
Give your answer as a mixed number in the simplest form.

Ans: _____

9. The ratio of A to B is $1 : 2$ and B to C is $3 : 4$. If C has a value of 16, what is the value of A ?

Ans: _____

10. $\frac{1}{6}$ of a number of students in a class play football and $\frac{3}{8}$ of them play basketball.
The remaining 22 students play table tennis. How many students play football?

Ans: _____

11. Arrange the following in decreasing order.

8.893, 10.01, 1.02, 1.9, 8.9

Ans: _____

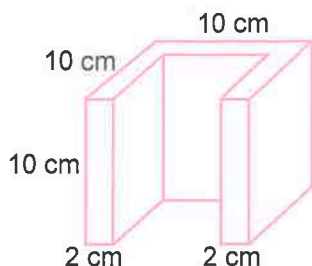
12. A whole number, when rounded to the nearest thousand, is 982 000. What is the largest possible value of the whole number?

Ans: _____

13. At a food fair, Mrs Johnson sold 30% of the canned drinks in the first hour. She sold 20% of the remaining canned drinks in the second hour. In the last hour, she sold half of what were left. What percentage of the original number of canned drinks did she have at the end of the three hours?

Ans: _____

14. A rectangular wooden block is cut and crafted into a solid as shown below. Find the volume of the solid.



Ans: _____

15. Find the value of $4b - \frac{b}{7}$ when $b = 5$.

Ans: _____

16. The pie chart shows the preference for drinks of some guests at a party. What fraction of the number of guests prefer to drink tea?

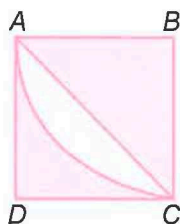


Ans: _____

17. $\frac{1}{3}$ of the area of a rectangle is equal to $\frac{4}{5}$ of the area of a square of side 11 cm.
What is the area of the rectangle?

Ans: _____

18. The figure below shows a square $ABCD$. AB is 14 cm. A quadrant is in the square with B as the centre of the circle. AC is a straight line bisecting the square. Find the shaded area of the figure. (Take $\pi = \frac{22}{7}$)



Ans: _____

19. What is the missing number in the box?

$$7.5 = 2\frac{1}{2} \times \boxed{?}$$

Ans: _____

20. If $\frac{1}{2}$ of A is equal to $\frac{1}{3}$ of B , express A as a fraction of B .

Ans: _____

21. Find the product of 3 hundredths and 2 tens. Express your answer as a decimal.

Ans: _____

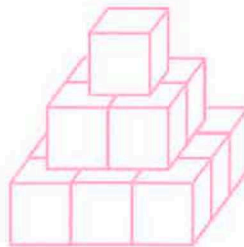
22. Lydia buys a dress, a blouse, a bracelet and a pair of pants. The average cost of these items is \$73.50. The cost of the pair of pants is $\frac{5}{9}$ that of the bracelet. If the dress costs \$70 and the blouse costs \$35, what is the difference between the cost of the bracelet and the pair of pants?

Ans: _____ [3]

23. If Vera were to give Ben 2 stickers, Ben would have the same number of stickers as Vera. If Ben were to give Vera 2 stickers, Vera would have 5 times as many stickers as Ben. How many stickers does Vera have?

Ans: _____ [3]

24. If each cube has sides of 2 cm, what is the total surface area (visible) of the composite figure?



Ans: _____ [3]

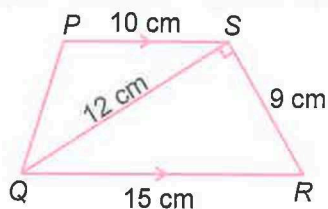
25. In a school, 0.6 of the girls and 0.4 of the boys enrolled in enrichment classes. There were an equal number of boys and girls who did not enrol in enrichment classes. If 480 students did not enrol in enrichment classes, how many students were there in the school?

Ans: _____ [3]

26. A rectangular tank measuring 40 cm by 15 cm by 10 cm is filled with water to a height of 3 cm. The ratio of the volume of water in the tank to the volume of water in a pail is 4 : 3. If $\frac{3}{5}$ of the pail is filled with water, find the height of the water level in the tank when the water in the pail is poured into the tank.

Ans: _____ [3]

27. In the figure below, $PQRS$ is a trapezium and RS is perpendicular to SQ . Given that $PS = 10$ cm, $QR = 15$ cm, $RS = 9$ cm and $SQ = 12$ cm, find the area of triangle PQS .



Ans: _____ [3]

28. In a cinema, there is a total of 420 men and boys. There is also a total of 480 women and girls. The ratio of men to girls is 3 : 2. The total number of men and women is 540. How many men are there in the cinema?

Ans: _____ [3]

29. The swimming pool shown below has 2 squares of different sizes. If the total area of the two squares is 232 cm^2 , find the shaded area.



Ans: _____ [3]

30. An orchard has 110 rows of fruit trees. Each row has 48 fruit trees. 25% of these are durian trees, 0.35 are mango trees, $\frac{1}{4}$ of the remainder are rambutan trees and the rest are chiku trees. What percentage of the total number of fruit trees is chiku trees?

Ans: _____ [3]

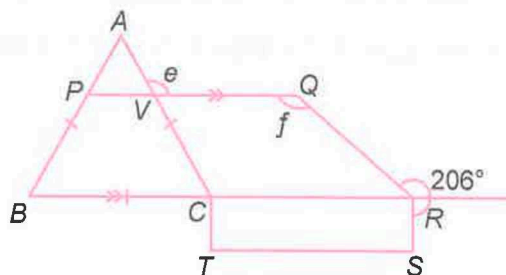
31. The value of q is 3 times the value of p . The value of p is twice the value of r .

- Express the sum of p and q in terms of r .
- What is the value of r if the sum of p and q is 184?

Ans: (a) _____ [2]

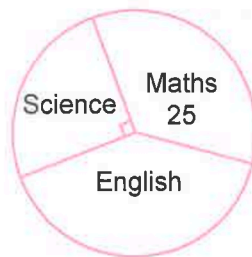
(b) _____ [1]

32. In the figure below, $AB = BC = AC$. $PQRB$ is a trapezium and $CRST$ is a rectangle. Find the sum of $\angle e$ and $\angle f$.



Ans: _____ [3]

33. The pie chart below shows the number of books on different subjects in a class library. There are 40% more English books than Maths books. What is the total number of books in the class library?



Ans: _____ [3]

34. 6 tables, 5 chairs and 3 lamps cost \$2174.80. 3 tables and 1 lamp cost \$730.60. 2 chairs and 1 lamp cost \$329.60. Find the cost of 6 lamps.

Ans: _____ [3]

35. A number of marbles is shared among Alan, Ben and Charlie. The ratio of the number of Alan's marbles to Ben's is $2 : 9$ and the ratio of the number of Ben's marbles to Charlie's is $1 : 3$. The difference between Charlie's and Ben's shares is 108 marbles. How many marbles must Charlie give to Alan and Ben in total so that all of them will have the same number of marbles?

Ans: _____ [3]

36. Anna put 19 apples in bag *A*, 24 apples in bag *B*, 15 apples in bag *C* and 80 apples in bag *D*. Susan added an equal number of pears into each of the bags. As a result, bag *D* contained the same number of fruits as the total number of fruits in bags *A*, *B* and *C*. How many pears did Susan put into each bag?

Ans: _____ [3]