

IMP Tuition
ACER/Ignite Mathematical Reasoning
Practice Test Paper Number : 36

Marks

/40

Marks(%)

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Time allocated : 40 minutes

1. A rainwater tank is $\frac{3}{5}$ full. It would take 90 litres more to fill the tank. What is the capacity of the tank?

- A. 20 litres
- B. 225 litres
- C. 150 litres
- D. 42 litres

2. A layer of topsoil is spread over a paddock with an area of 2 ha, so that the topsoil has an average depth of 5 cm. What is the volume of topsoil?

- A. 100 000 m³
- B. 1 000 m³
- C. 4 000 m³
- D. 10 m³

3. What is the average of $\frac{5}{6}$ and $\frac{3}{4}$?

- A. $\frac{4}{5}$
- B. $\frac{7}{12}$
- C. $\frac{19}{24}$
- D. $1\frac{5}{12}$

Questions 4 and 5 refer to the diagrams of the three cubes below. The cubes have sides of 2 cm, 3 cm and 5 cm.



4. If the three cubes are stacked on top of each other so that the largest cube is at the bottom and the smallest is at the top (first diagram), then glued in this position, what is the surface area of this object?

- A. 228 cm²
- B. 210 cm²
- C. 215 cm²
- D. 202 cm²

5. If the three cubes are stacked as in the second diagram, what is the difference between the surface area of this shape and the first object?

- A. 4 cm^2
- B. 9 cm^2
- C. 0
- D. 10 cm^2

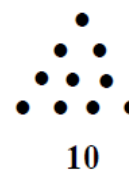
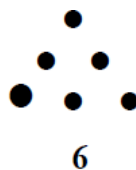
6. A certain service station allows motorcyclists to put free air into a tyre, as long as they do not exceed more than a certain amount of air per tyre. If they do put in more than this amount, they are charged a certain amount for every extra cubic centimetre of air they put in. A motorcyclist is charged \$1.60 after putting 130 cm^3 of air into one tyre. Another motorcyclist uses the same amount of air, but because he puts some in one tyre and some in the other; he is charged 60c . How much free air can be put in one tyre?

- A. 80 cm^3
- B. 10 cm^3
- C. 30 cm^3
- D. 50 cm^3

7. The sum of the reciprocals of three whole numbers is one. The numbers are:

- A. 0,1 and 2
- B. 2,3 and 6
- C. 2,3 and 5
- D. 1,4 and 5

8. The first three triangular numbers are shown below.



The eleventh triangular number is:

- A. 66
- B. 78
- C. 121
- D. 85

9. $3 \times 2 \div (2 + 1) :$

- A. 2
- B. 4
- C. 7
- D. 6

10. The highest common factor of 48, 96 and 80 is:
- A. 8
 - B. 16
 - C. 48
 - D. 12
11. Fifty-seven months from next December will be a
- A. July
 - B. February
 - C. June
 - D. September
12. How many prime factors does 360 have?
- A. 4
 - B. 3
 - C. 8
 - D. 6
13. The sum of forty-seven, eighty-three and eighty-four is:
- A. 214
 - B. 217
 - C. 130
 - D. 314

14. What is the next number in this pattern?

$$\begin{array}{cccc}
 1 & 7 & 13 & 10 & ? \\
 \swarrow \quad \searrow & \swarrow \quad \searrow & \swarrow \quad \searrow & \swarrow \quad \searrow & \\
 7 & 49 & 91 & 70 &
 \end{array}$$

- A. 16
 - B. 11
 - C. 7
 - D. 50
15. Jane's pulse is 80 beats/minute. In one day, her heart beats approximately
- A. 100 000 times
 - B. 800 000 times
 - C. 1 000 000 times
 - D. 80 000 times

16. $\frac{1}{2} \div \frac{3}{4}$

A. $\frac{3}{8}$

B. $2\frac{2}{3}$

C. $1\frac{1}{2}$

D. $\frac{2}{3}$

17. $0.2 \times 0.3 =$

A. 0.5

B. 6.0

C. 0.06

D. 0.6

18. How many days are in the years 1988 to 2088 (inclusive)?

A. 36865

B. 36891

C. 36890

D. 36525

19. A certain number when multiplied by itself gives an answer which is less than the number itself.
The number must be;

A. odd

B. greater than one

C. less than one

D. less than zero

20. How many perfect squares between 1 and 100 end in 2?

A. 1

B. 2

C. 0

D. 4

21. How many faces has a triangular pyramid?

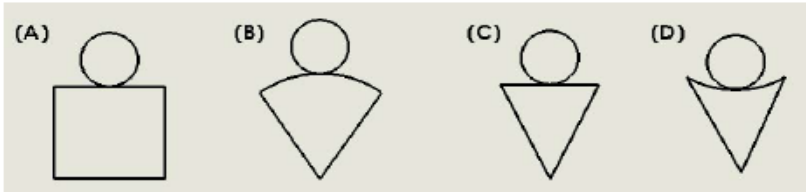
A. 3

B. 4

C. 5

D. 6

22. Which net folds to give a cone?



23. How many axes of symmetry has a square?

- A. 4
- B. 8
- C. 2
- D. 1

24. Bananas cost twice as much as oranges. Stella buys 10 bananas and 3 oranges. With the same amount of money she could have bought 4 bananas and;

- A. 15 oranges
- B. 9 oranges
- C. 7 oranges
- D. 22 oranges

25. The symbols C, @ and Q, each represent a digit in the three digit number "C@Q". The number C@Q is divisible by 2,3 and 5. The product C x @ x Q, is equal to;

- A. 10
- B. 0
- C. 15
- D. 30

26. What is a half of the reciprocal of 4?

- A. $\frac{1}{2}$
- B. $\frac{1}{4}$
- C. $\frac{1}{8}$
- D. 1

27. Fill in the missing numbers in the number square below. What numbers go in the spaces marked "P" and "Q"?

7		1	13
	6	Q	19
1			17
12	P	11	

- A. P=26 and Q=9
- B. P=26 and Q=8
- C. P=20 and Q=9
- D. P=20 and Q=8

28. What is the arithmetic mean (average) of 3, 7, 2, 5, 4, 4 and 3?

- A. 2
- B. 3
- C. 4
- D. 5

29. Two thirds is closet to:

- A. 0.7
- B. 66%
- C. 0.66
- D. 67%

30. The sum of three consecutive even numbers is 1032. The largest of the three numbers is,

- A. 348
- B. 344
- C. 345
- D. 346

31. Valery's road is a one-way street divided by two painted lines into three lanes. It takes four litres of paint to produce these lines. How many more litres of paint would it take to change the street into a six lane road?

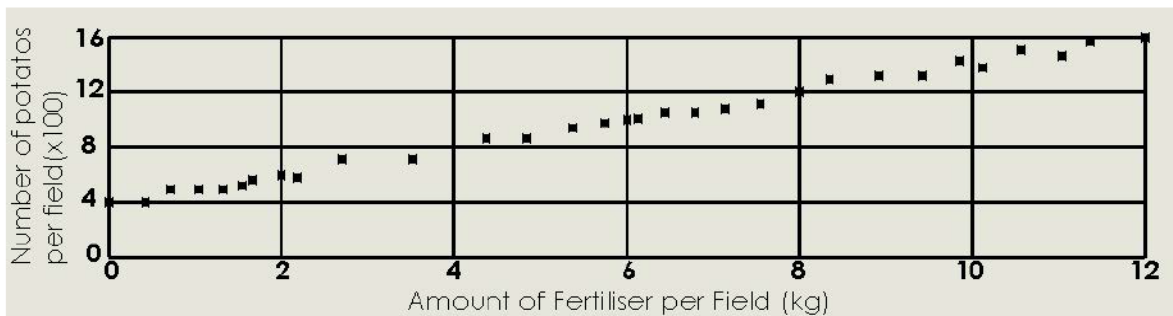
- A. 8 litres
- B. 12 litres
- C. 6 litres
- D. 10 litres

32. The number 916 is unusual in that it is the same number upside down as it is the right way up. How many numbers with this property are there between 1600 and 2000?

- A. 3
- B. 5
- C. 4
- D. 2

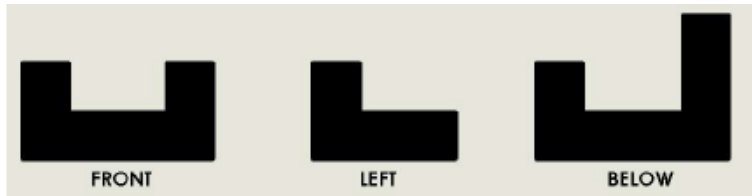
Questions 33 and 34 refer to the graph below.

A potato farmer with a large potato farm decides to look at the effect of different amounts of fertiliser on her potato harvest in each field. She counts the number of potatoes harvested from each field and graphs it against the amount of fertiliser used in that field.



33. Assuming that the trend in the results of the graph above continues, what is the best estimate for the amount of fertiliser needed to harvest 3200 potatoes from a certain field?
- A. 28 kg
 - B. 20 kg
 - C. 36 kg
 - D. 32 kg
34. The farmer has 30 fields on her farm. How much fertiliser should she spread on each field if she wants to produce a total harvest of 63 000 potatoes?
- A. 17 kg
 - B. 60 kg
 - C. 59 kg
 - D. 21 kg
35. Kevin draws five dots on a circle spaced equally around the circumference. He then joins the dots so that every dot is joined by a straight line to every other dot. How many straight lines are on Kevin's drawing?
- A. 10
 - B. 15
 - C. 25
 - D. 16
36. Angeline owes \$3 to Beatrice, Beatrice owes \$2 to Colin and Colin owes \$1 to Dyfed. Which one of the following "solutions" allows each person to, end up with correct amount of money?
- A. Angeline pays \$1 to Beatrice and Colin pays \$1 to Dyfed.
 - B. Beatrice pays \$1 to Colin and Angeline pays \$1 to Dyfed.
 - C. Angeline pays \$1 each to Beatrice, Colin and Dyfed.
 - D. Angeline pays \$3 to Dyfed, and Beatrice pays \$2 to Colin.
37. Which of the following pairs of numbers has its product equal to its sum?
- A. 4 and $1\frac{1}{5}$
 - B. 3 and $2\frac{1}{2}$
 - C. 5 and $1\frac{1}{4}$
 - D. 7 and $1\frac{3}{4}$

38. A group of 1 cm^3 cubes are stacked together. Their silhouettes from different viewpoints are shown below.



How many cubes are stacked in this arrangement?

- A. 8
- B. 7
- C. 10
- D. 9

39. Which number comes next in the following sequence?

1, 1, 2, 3, 5, 8, 13,

- A. 18
- B. 21
- C. 16
- D. 25

40. The partitions of a number are the different ways that a number can be written as the sum of whole numbers. The number four has 5 partitions ($1 + 1 + 1 + 1$, $1 + 1 + 2$, $1 + 3$, $2 + 2$ and 4). How many partitions does the number 5 have?

- A. 5
- B. 6
- C. 7
- D. 8