MANZANILLA SECONDARY SCHOOL

4 BUSINESS END OF TERM 1 TEST
MATHEMATICS
MS. RAGBIR

STUDENT'S NAME:_____

INSTRUCTIONS:

This test comprises of two parts:
Section A – 30 multiple choice questions
Section B – 2 structured questions.

You are required to answer **ALL** the questions in each section in the space provided.

You are not allowed to use a calculator in section A only.

Further instructions will be given for each section.

SECTION A

1. In addition to this test booklet, you should have an answer sheet.
2. Calculators and mathematical tables may NOT be used for this paper.
3. **A list of formulae is provided on page 2 of this booklet.**

4. This section consists of 30 questions. You have 45 minutes to answer them.

5. Each item in this test has four suggested answers, lettered (A), (B), (C), (D). Read each item you are about to answer, and decide which choice is best.
6. On your answer sheet, find the number which corresponds to your item and blacken the space having the same letter as the answer you have chosen. Look at the sample item below.

Sample Item

$2a + 6a =$

(A) $8a$
(B) $8a^2$
(C) $12a$
(D) $12a^2$

Sample Answer

The best answer to this item is "$8a$", so answer space (A) has been blackened.

7. If you want to change your answer, erase your old answer completely and fill in your new choice.
8. When you are told to begin, turn the page and work as quickly and as carefully as you can. If you cannot Answer an item, omit it and go on to the next one. You can return later to the item omitted. Your score will be the total number of correct answers.
9. You may do any rough work in the booklet.
10. Do not be concerned that the answer sheet provides spaces for more answers than there are items in this test.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

LIST OF FORMULAE

Volume of a prism $V = Ah$ where A is the area of a cross-section and h is the perpendicular length.

Volume of a cylinder $V = \pi r^2 h$ where r is the radius of the base and h is the perpendicular height.

Volume of a right pyramid $V = \frac{1}{3}Ah$ where A is the area of the base and h is the perpendicular height.

Circumference $C = 2\pi r$ where r is the radius of the circle.

Area of a circle $A = \pi r^2$ where r is the radius of the circle.

Area of Trapezium $A = \frac{1}{2}(a+b)h$ where a and b are the lengths of the parallel sides and h is the perpendicular distance between the parallel sides.

Roots of quadratic equations If $ax^2 + bx + c = 0$,

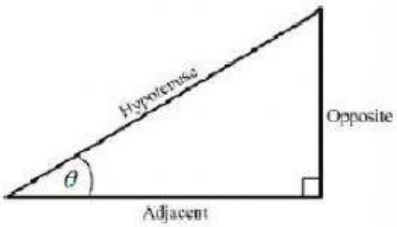
then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Trigonometric ratios

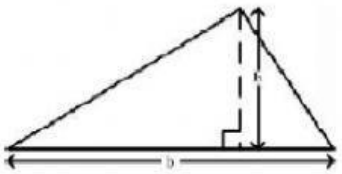
$$\sin\theta = \frac{\text{opposite side}}{\text{hypotenuse}}$$

$$\cos\theta = \frac{\text{adjacent side}}{\text{hypotenuse}}$$

$$\tan\theta = \frac{\text{opposite side}}{\text{adjacent side}}$$



Area of triangle Area of $\Delta = \frac{1}{2}bh$ where b is the length of the base and h is the perpendicular height



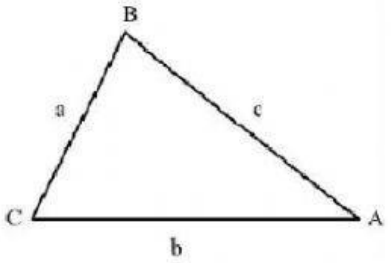
Area of $\Delta ABC = \frac{1}{2}ab\sin C$

Area of $\Delta ABC = \sqrt{s(s-a)(s-b)(s-c)}$

where $s = \frac{a+b+c}{2}$

Sine rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$



1. 0.875 written as a common fraction is

(A) $\frac{1}{4}$

(B) $\frac{1}{2}$

(C) $\frac{3}{4}$

(D) $\frac{7}{8}$

2. The number 3.14063 written correct to 3 decimal places is

(A) 3.140

(B) 3.141

(C) 3.146

(D) 3.150

3. The EXACT value of $2 \div (0.01)^2$ is

(A) 0.0002

(B) 0.0005

(C) 5000

(D) 20000

4. $0.386 \times 0.06 =$

(A) 0.02316

(B) 0.2316

(C) 2.313

(D) 23.16

5. If $\$350$ is divided into two portions in the ratio $2:5$, the smaller portion is

(A) $\$ 70$

(B) $\$100$

(C) $\$175$

(D) $\$250$

6. If 60% of a number is 90, what is the number?

(A) 30

(B) 54

(C) 150

(D) 180

7. The H.C.F. of 12, 15 and 60 is

(A) 1

(B) 3

(C) 12

(D) 60

8. The value of the digit 2 in 425.3 is

(A) 2 tenths

(B) 2 ones

(C) 2 tens

9. 99×101 is the same as

(A) $(99 \times 100) + 1$

(B) $(99 \times 100) - (99 \times 1)$

(C) $(99 \times 100) + (99 \times 1)$

(D) $(99 \times 100)(99 \times 1)$

10. What is the least number of plums that can be shared equally among 6, 9 or 12 children?

(A) 27

(B) 36

(C) 54

(D) 72

11. If $P=\{2,3,5,7\}$, $Q=\{2,3,6\}$ and $S=\{2,4,5\}$, then $P\cap Q\cap S=$

(A) $\{\ \}$

(B) $\{2\}$

(C) $\{2,3\}$

(D) $\{2,3,4,5,6,7\}$

12. $U=\{\text{Integers}\}$

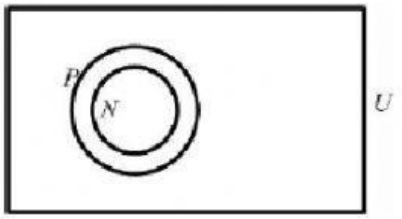
$P=\{\text{Positive Integers}\}$

$N=\{\text{Negative Integers}\}$

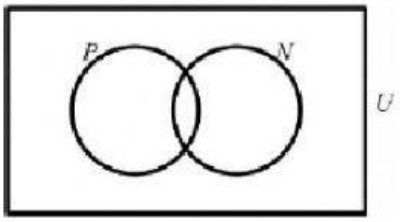
Which of the Venn diagrams below illustrates the statement:

"No positive integers are negative integers" ?

(A)



(B)



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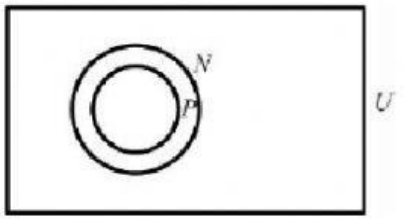
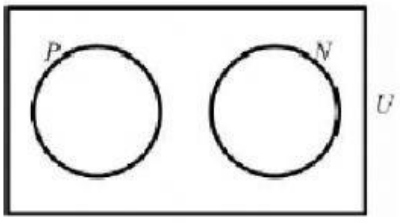
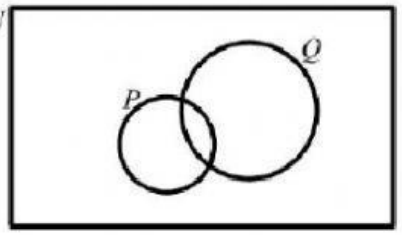


(D)



13.



In the Venn diagram above, $n(P)=5$, $n(Q)=9$ and $n(P\cup Q)=10$.

What is $n(P\cap Q)$?

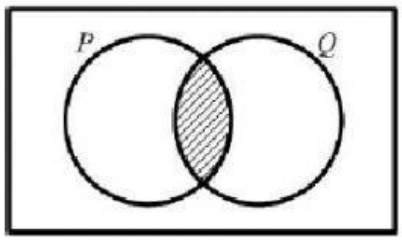
(A) 4

(B) 6

(C) 14

(D) 24

14.



The two circles above represent set P and set Q.

If $P=\{\text{Factors of 6}\}$ and $Q=\{\text{Factors of 4}\}$, then the shaded region represents

(A) $\{\ \}$

(B) $\{1,2\}$

(C) $\{4,6,8,\ldots\}$

(D) $\{12,24,36,\ldots\}$

15. The simple interest on \$400 at 5% per annum for 2 years is given by

(A) $\$\frac{400\times5\times2}{100}$

(B) $\$\frac{400\times5}{2\times100}$

(C) $\$\frac{400\times2}{5\times100}$

(D) $\$\frac{400\times100}{2\times5}$

16. A man bought a calf for \$200 and sold it for \$250. What was his gain as a percentage of the cost price?

(A) 5%
(B) 15%
(C) 20%
(D) 25%

17. The sum of $\frac{1}{2}$ and $\frac{1}{3}$ is

(A) $\frac{2}{5}$

(B) $\frac{3}{5}$

(C) $\frac{5}{6}$

(D) $\frac{7}{6}$

18. A salesman is paid 5% of his sales as commission. His sales for last month were \$2020. How much commission was he paid?

(A) \$ 11.00
(B) \$ 20.20
(C) \$101.00
(D) \$110.00

19. How much does a customer pay for an article marked at \$50.00 if a sales tax of 6% is charged?

(A) \$56.00
(B) \$53.00
(C) \$47.00
(D) \$44.00

20. The exchange rate for one United States dollar $(US\$1.00)$ is two dollars and seventy cents in Eastern Caribbean currency $(EC\$2.70)$ What is the value of $US\$4.50$ in EC currency?

(A) \$ 1.67
(B) \$ 6.00
(C) \$ 7.20
(D) \$12.15

21. If the simple interest on \$800 for 3 years is \$54. What is the rate of interest per annum?

(A) 44%

(B) 5%

(C) 2¼%

(D) $\frac{4}{9}$%

22. Mary invested \$200 for 3 years at 5% per annum. John invested \$300 at the same rate. If they both received the same amount of money in interest, for how many years did John invest his money?

(A) 1½
(B) 2
(C) 3
(D) 10

23. $(8a)^2 =$

(A) $16a$
(B) $64a$
(C) $16a^2$
(D) $64a^2$

24. $(-8a)\times(-3b) =$

(A) $-24ab$
(B) $-11ab$
(C) $11ab$
(D) $24ab$

25. $5(2x-y)-2(3y-5x) =$

(A) $-11y$
(B) $2x-6y$
(C) $6x-7y$
(D) $20x-11y$

26. $3x^2 \times 2x^3 =$

(A) $6x^5$
(B) $5x^5$
(C) $6x^6$
(D) $72x^5$

27. If $m * n = \sqrt{mn-n^2}$, then $5 * 3 =$

(A) $\sqrt{6}$
(B) 3
(C) $\sqrt{15}$
(D) 6

28. If $50-3x = x-26$, then $x =$

(A) -12
(B) -6
(C) 6
(D) 19

29. If $P = \frac{m^2}{2-m}$, when $m = -3$, then $P =$

(A) -6
(B) $\frac{-6}{5}$
(C) $\frac{9}{5}$
(D) 9

30. Althea saves $\$x$ each month; but in June she saved \$4 more than twice her regular amount. In June she saved

(A) $\$4x$
(B) $\$6x$
(C) $\$(x+4)$
(D) $\$(2x+4)$

SECTION B

This section has two question worth 20 marks. You can use a calculator. You have 45 minutes to complete this section.

Answer ALL questions.

All working must be clearly shown.

1. (a) Using a calculator or otherwise, evaluate EACH of the following:

(i) $\dfrac{2\frac{1}{4} - 1\frac{3}{5}}{3}$

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(2 marks)

(ii) $\sqrt{0.0529} + 0.216$, expressing your answer in standard form.

(3 marks)

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(b) A typist is paid a basic wage of $22.50 per hour for a 40-hour week.

(i) Calculate the typist's basic weekly wage. **(1 mark)**

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Overtime is paid at one and a half times the basic hourly rate.

(ii) Calculate the overtime wage for ONE hour of overtime work. **(1 mark)**

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