S3 Mathematics

Test 4: Quadrilaterals

Name : _____ Class : _____

Date : _____ Time : 45 minutes

Instructions to students:

1. Unless otherwise specified, show your workings clearly.
2. Unless otherwise specified, numerical answers should be exact or correct to 3 significant figures.

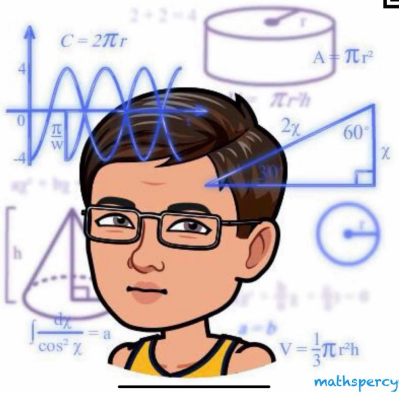
Marks:

Section	Marks	
A: Basic Algebraic Skills	/10	
B: Multiple Choice Questions	/16	
C(1): Short Questions	/14	
C(2): Long Questions	/10	/40
D: Bonus (Maximum: 3 marks)	+	
PP / U ☹	PP – U –	
Total:	/50	%

Section A: Basic Algebraic Skills (5 marks)

1. Make k the subject of the formula $\frac{2-7k}{h}=7$.

(3 marks)



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2. Make b the subject of the formula $\frac{4}{a} - \frac{3}{b} = 1$.

(3 marks)

3. Consider the formula $5(2p - q) = p + 9$.

(a) Make q the subject of the above formula.

(b) If the value of p is decreased by 5, write down the change in the value of q.

(4 marks)

Section B: Multiple Choice Questions (16 marks)

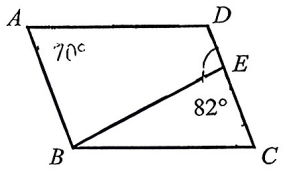
4. In the figure, $ABCD$ is a parallelogram and CED is a straight line. $\angle BAD = 70°$ and $\angle BEC = 82°$. Find $\angle CBE$.

A. 38°

B. 28°

C. 20°

D. 12°



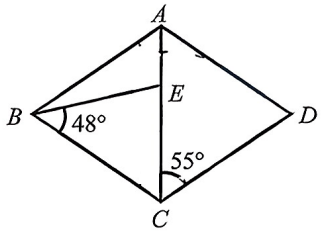
5. In the figure, $ABCD$ is a rhombus. E is a point on AC. If $\angle ACD = 55°$ and $\angle CBE = 48°$, find $\angle ABE$.

A. 7°

B. 15°

C. 22°

D. 29°



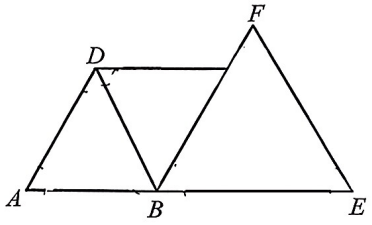
6. In the figure, $ABCD$ is a rhombus. ABE and BCF are straight lines. If $BE = EF$ and $\angle BEF = 64°$, then $\angle BDC =$

A. 64°.

B. 61°.

C. 58°.

D. 52°.



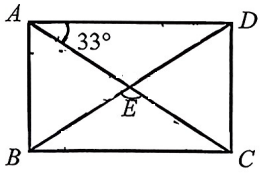
7. In the figure, $ABCD$ is a rectangle. AC and BD intersect at E. If $\angle DAE = 33°$, then $\angle CDE =$

A. 33°.

B. 45°.

C. 57°.

D. 66°.



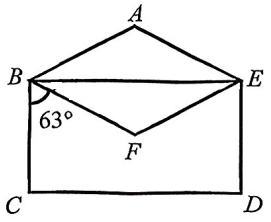
8. In the figure, $ABFE$ is a rhombus and $BCDE$ is a rectangle. If $\angle CBF = 63°$, then $\angle BAE =$

A. 54°.

B. 108°.

C. 117°.

D. 126°.



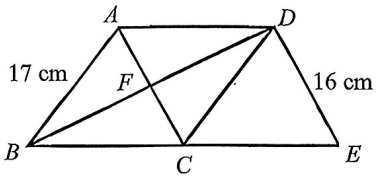
9. In the figure, $ABCD$ is a rhombus. BC is produced to E such that $ACED$ is a parallelogram. AC and BD intersect at F. $AB = 17$ cm and $DE = 16$ cm. Find the length of BD.

A. 15 cm

B. 30 cm

C. 32 cm

D. 34 cm



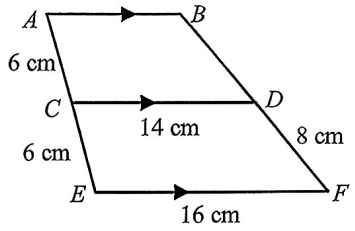
10. In the figure, ACE and BDF are straight lines. $AB \parallel CD \parallel EF$. Find the perimeter of quadrilateral $AEFB$.

A. 51 cm

B. 52 cm

C. 56 cm

D. 60 cm



11. In the figure, $PQRS$ is a parallelogram. T is a point on SR such that $PS = PT$. Which of the following must be true?

I. $PT = QR$ ✓

II. $\angle PTR + \angle PQR = 180°$ ✓

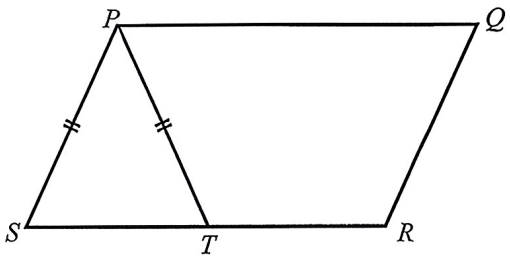
III. $ST = TR$

A. I and II only

B. I and III only ×

C. II and III only ×

D. I, II and III



Write down the correct answers in the boxes.

4	5	6	7
8	**9**	**10**	**11**

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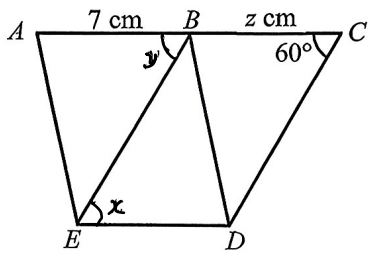
Section C(1): Short Questions (14 marks)

12. In the figure, *ABDE* and *BCDE* are parallelograms. Find the unknowns.

(4 marks)

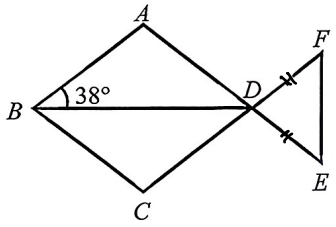


13. In the figure, *ABCD* is a rhombus. *AD* and *CD* are produced to *E* and *F* respectively. If $DE = DF$ and $\angle ABD = 38°$, find

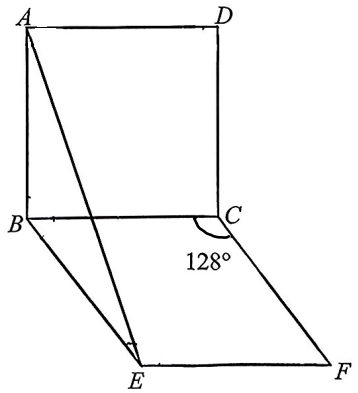
(a) $\angle ADC$,

(b) $\angle DEF$.

(5 marks)



14. In the figure, *ABCD* is a square and *BEFC* is a rhombus. If $\angle BCF = 128°$, find $\angle BAE$. (5 marks)



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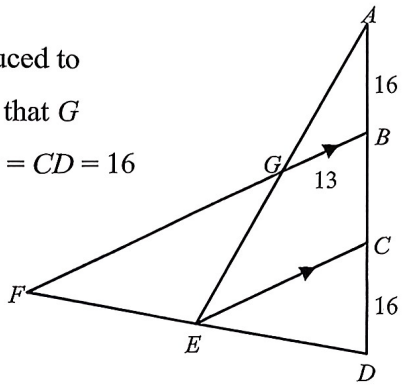
Section C(2): Long Questions (10 marks)

In this section, answer either part(X) or part (Y) in each question. Do not answer both parts. If both parts in a question in this section are attempted, only **part (X)** will be marked.

15X. In the figure, B and C are points lying on AD. DE is produced to F such that $EC \,//\, FB$. FB and AE intersect at G. It is given that G is the mid-point of AE and E is the mid-point of DF. If $AB = CD = 16$ and $GB = 13$.

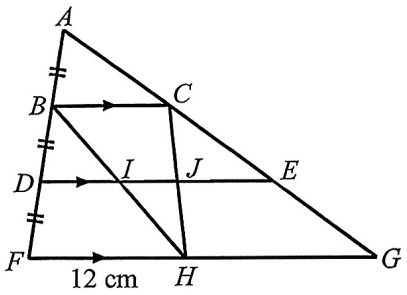


(a) Find BC and CE.

(b) Find FG.

(5 marks)

15Y. In the figure, $ABDF$, $ACEG$, BIH, CJH, $DIJE$ and FHG are straight lines, $BC \,//\, DE \,//\, FG$ and $FH = 12$ cm. It is known that $DI : IJ = 3 : 2$.



(a) Find DI.

(b) Find BC.

(c) Find HG.

(10 marks)

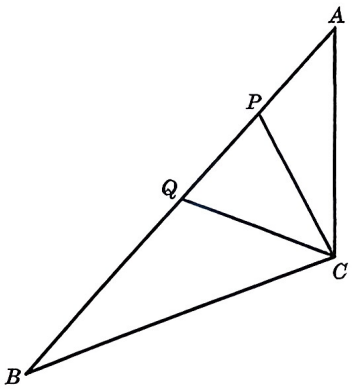
Solution: Q15. (X / Y) (*Please circle the question that you attempt in Q.15)

/10

Section D: *Bonus Questions (3 marks)

16. In the figure, P is a point lying on AB such that $CB = 2CP$. Q is the mid-point of AB, and CQ bisects $\angle PCB$. Prove that $AP = PQ$.

(3 marks)



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