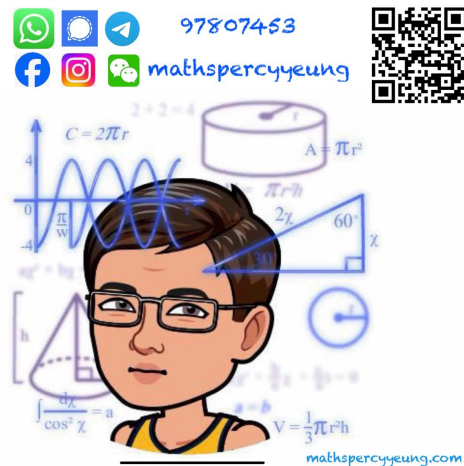


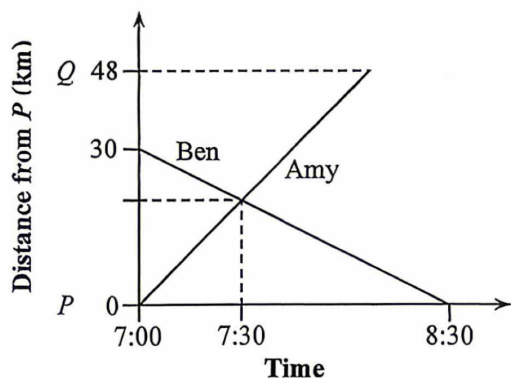
Section A: Multiple-Choice Questions (10 marks, 1 mark each)



1. If x is 25% less than y and z is 20% greater than y , then $x : z =$
 - A. 8 : 5.
 - B. 5 : 8.
 - C. 5 : 4.
 - D. 4 : 5.

2. The scale of a map is 1 : 250. If the actual dimensions of the area are 50 m \times 8 m, then the area of the zone on the map is
 - A. 1.6 cm².
 - B. 10 cm².
 - C. 64 cm².
 - D. 2 500 cm².

3. The figure shows the travel graphs for Ben and Amy driving along a straight road PQ . Which of the following must be true?
 - I. The travelling time of Ben is longer than that of Amy.
 - II. Amy met Ben after she travelled for 10 km.
 - III. Amy arrived at Q at 8:10.



- I. The travelling time of Ben is longer than that of Amy.
 - II. Amy met Ben after she travelled for 10 km.
 - III. Amy arrived at Q at 8:10.
- A. I only
 - B. II only
 - C. I and III only
 - D. II and III only

4. If 100 Hong Kong dollars (HKD) is equivalent to 12.785 US dollars (USD) and 30 USD is equivalent to 63203 Burmese Kyat (MMK), then 35 HKD can be changed to
- A. 164 MMK, *cor. to 3 sig. fig.*
- B. 269 MMK, *cor. to 3 sig. fig.*
- C. 9430 MMK, *cor. to 3 sig. fig.*
- D. 16500 MMK, *cor. to 3 sig. fig.*

5. Consider the following table.

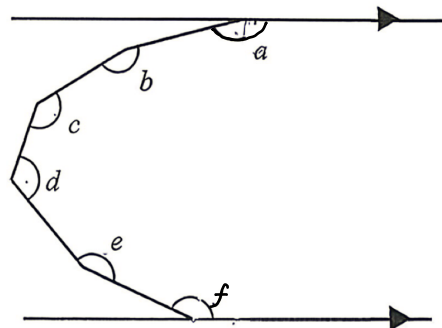
x	16	32	64	96
y	48	24	12	8

Which of the following shows the relationship between x and y ?

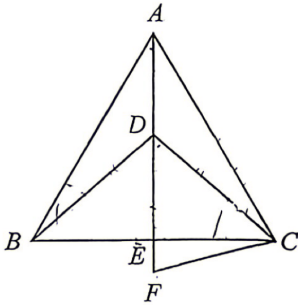
- A. $y = 3x$
- B. $x = 12y$
- C. $xy = 96$
- D. $xy = 768$

6. In the figure, $a + b + c + d + e + f =$

- A. 540° .
- B. 720° .
- C. 900° .
- D. 1080° .



7. In the figure, D is a point lying on AF . AF and BC intersect at point E and $BD = CD$. It is given that $AB = AC = BC = AF$. Find $\angle AFC$.



- A. 30°
 B. 55°
 C. 60°
 D. 75°
8. If $ABCDEF$ is a regular hexagon, which of the following must be correct?

- I. $BC \parallel AD$
 II. $\angle BFA = 30^\circ$
 III. $\triangle CFE$ is right-angled at F

- A. I and II only
 B. I and III only
 C. II and III only
 D. I, II and III
9. A and B are two regular polygons. The ratio of the size of an interior angle of A to that of B is $21 : 20$. If B is a regular 14-sided polygon, the size of each exterior angle of polygon A is

- A. 15° .
 B. 18° .
 C. 20° .
 D. 22.5° .

10. If an interior angle of an n -sided regular polygon is greater than 5 times its exterior angle by 45° , which of the following must be true?

- I. $n = 16$
- II. The difference of an interior angle and an exterior angle is 157.5° .
- III. The number of diagonals is 16.

- A. I only
- B. I and III only
- C. II and III only
- D. I, II and III

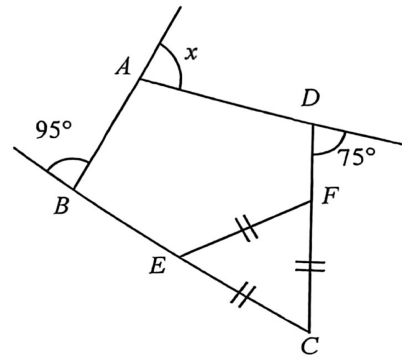
Section B : Short Questions (15 marks)

1. The figure shows a scale drawing of a computer microchip. Suppose the actual length of the microchip is 6 mm and its length in the drawing is 15 cm.
 - (a) Find the scale of this drawing in the form $1 : n$.
 - (b) A tiny resistor is drawn in the same scale as the microchip. If the resistor is 4.5 cm long in the drawing, find its actual length in mm.

2. It is given that $a : b = \frac{1}{4} : \frac{1}{5}$ and $b : c = 3 : 2$.
 - (a) Find $a : b : c$,
 - (b) If $a - c = 49$, find the value of b .

3. In the figure, E and F are points on BC and CD respectively such that $\triangle CEF$ is an equilateral triangle. Find x .

(3 marks)



4. In Figure 4a, $\angle BAE = \angle CAE$, $AD \perp BC$ and $\angle B > \angle C$.

- (a) (i) Find $\angle BAE$ in term of $\angle B$ and $\angle C$.
 (ii) Hence or otherwise, prove that $\angle EAD = \frac{\angle B - \angle C}{2}$.

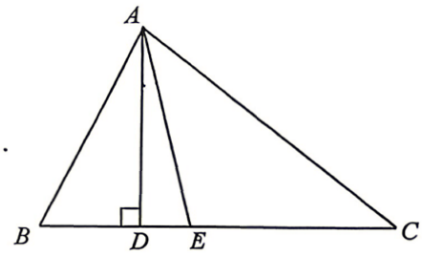


Figure 4a

- (b) In Figure 4b, $\angle BAE = \angle CAE$ and $AD \perp BC$. AEP is a straight line and F is a point on BC such that $PF \perp BC$. If $\angle B = 78^\circ$ and $\angle P = 31^\circ$, find $\angle C$.

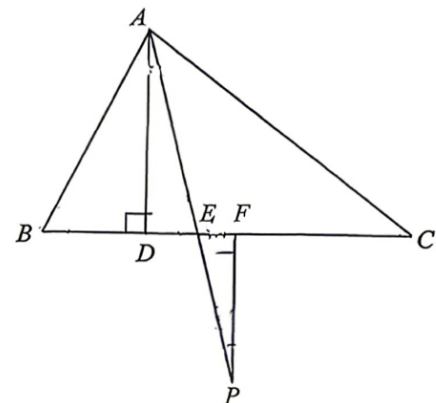


Figure 4b

(5 marks)

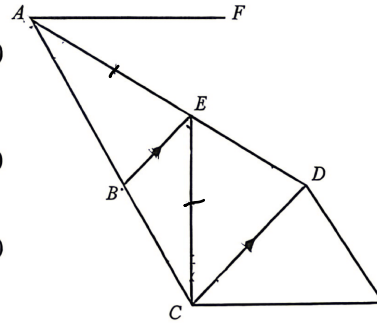
--- End of Section B ---
 --- Please proceed to Sections C and D. ---

Section C: Long Questions (25 marks)

1. There are some \$1 coins, \$2 coins and \$5 coins in Carl's pocket. The number of \$1 coins is one-third of the number of \$2 coins. If the number of \$5 coins is doubled, the ratio of the total value of the \$2 coins to the total value of the \$5 coins becomes 6 : 25 .
- (a) Find the ratio of the number of \$1 coins to the number of \$2 coins to the number of \$5 coins. (2 marks)
- (b) During recess, Carl buys a snack costing \$6 with exactly two types of coins and receives no change.
- (i) List out all the possible combinations of coins that Carl may have used. (1 mark)
- (ii) After the purchase, the ratio of the number of \$1 coins to the number of \$2 coins is the same as the ratio of the number of \$1 coins to the number of \$5 coins. If Carl still has coins of all three types after the purchase, find the original total value of the coins. (4 marks)

2. In the figure, ABC and AED are straight lines. $BE \parallel CD$, $AE = CE$, $\angle BAE = \angle EAF$, $\angle ECD = \angle DCG$ and $\angle ACD = \angle ADC$.

- (a) Determine whether $\triangle ABE$ is isosceles. (2 marks)
- (b) Let $\angle BAE = x$.
- (i) Prove that $AF \parallel CG$. (4 marks)
- (ii) If $\angle ADG = 155^\circ$, express $\angle G$ in terms of x . (2 marks)



3. In the figure, $ABCDEF$ is a regular hexagon and $FGHIJ$ is a regular pentagon. AFK and $CHDI$ are straight lines. O is a point inside $ABCDEF$ such that $\angle FAO = \angle BAO$ and $\angle ABO = \angle CBO$.

(a) Prove that

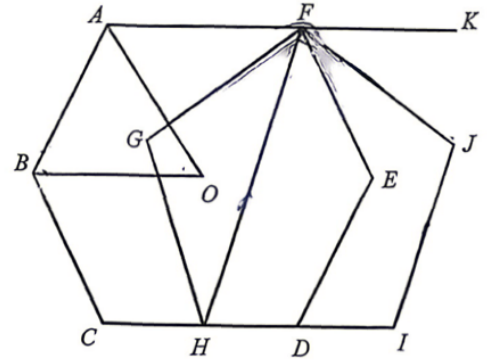
(i) $\triangle ABO$ is equilateral, (3 marks)

(ii) $FH \parallel JI$. (3 marks)

(b) Find

(i) $\angle EFJ$, (2 marks)

(ii) $\angle JFK$. (2 marks)



Section D: Challenging Question (5 optional marks)

There are three sizes of cups in StarCarls – short, medium and tall. On Easter Day, Carl, the owner of StarCarls, offered the following promotions.

Short Cup: \$10 each	Medium Cup: \$20 each	Tall Cup: \$25 each
Offer 1 – Buy one Tall, get one Short free		
Offer 2 – Buy one Tall, get one Medium at 50% off		

Each order could include only one drink, unless one and only one of the offers is applied (i.e., an order should include either one drink or two drinks). After the promotion period, Carl found that the numbers of cups of different sizes used were in the ratio – short : medium : tall = 7 : 3 : 11 . Among the orders that included a tall cup, the ratio of the number of orders using Offer 1 to those using Offer 2 to those with no offers was 3 : 2 : 6 . If the total sales were \$14 200, find the total number of orders. (5 marks)