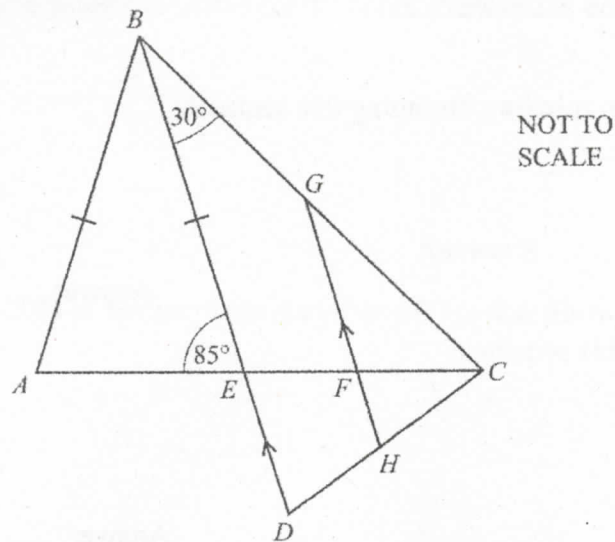




In the diagram, ABC and DEC are triangles. $AB = BE$ and BE is parallel to GH . Angle $AEB = 85^\circ$ and angle $CBE = 30^\circ$.

- (i) Find angle EAB .

Answer Angle $EAB = \dots\dots\dots$ [1]

- (ii) Find angle ABE .

Answer Angle $ABE = \dots\dots\dots$ [1]

- (iii) Find reflex angle ABC .

Answer Angle $ABC = \dots\dots\dots$ [1]

- (iv) Find angle BEC .

Answer Angle $BEC = \dots\dots\dots$ [1]

- (v) Find angle EFH .

Answer Angle $EFH = \dots\dots\dots$ [1]

- (vi) Find angle BCE .

Answer Angle $BCE = \dots\dots\dots$ [1]

- (vii) Complete the following statement.

Triangle $\dots\dots\dots$ is similar to triangle $\dots\dots\dots$ [1]

- (b) For a regular 12-sided polygon, find the size of

- (i) an exterior angle,

Answer $\dots\dots\dots$ [2]

- (ii) an interior angle.

Answer $\dots\dots\dots$ [1]

2 These are the first four terms of a sequence. 31, 24, 17, 10

(a) Write down the term-to-term rule for continuing this sequence.

Answer..... [1]

(b) Find the next two terms in this sequence.

Answer....., [2]

(c) Find the n th term.

Answer..... [2]

3 (a) Clare invests \$12000 for 3 years at a rate of 8% per year compound interest. Calculate the value of her investment at the end of the 3 years. Give your answer correct to the nearest \$10.

Answer \$ [3]

(b) Zak invests \$560 for one year. After one year his investment is worth \$630. Calculate the percentage increase.

Answer.....% [2]

4 (a) Lei earns \$6.75 per hour. One week she works for 37 hours. How much does she earn this week?

Answer \$ [1]

(b) One month Lei earns \$1080. 20% of her earnings are taken off for tax. Show that the amount of money she has left is \$864.

Answer [1]

(c) Lei divides \$864 in the ratio bills : spending money : savings = 9 : 4 : 2.

(i) Work out how much spending money she has.

Answer \$ [2]

(ii) What fraction of the \$864 does she use for bills? Give your answer in its simplest form.

Answer [2]

(d) Lei wants to buy a computer.

Computer \$425 + sales tax

(i) The sales tax is 15%. Work out the total cost of this computer.

Answer \$ [2]

(ii) Lei goes on holiday to London. The exchange rate between dollars and pounds (£) is $\$1 = \pounds 0.52$. The total cost of the same computer in London is £235. Work out how much less, in pounds, the computer costs in London.

Answer £ [2]

(e) Lei inherits \$1400. She spends \$175 on a camera.

(i) Work out \$175 as a percentage of \$1400.

Answer % [1]

(ii) Lei invests the remaining \$1225 for 3 years at a rate of 4.5% per year compound interest. How much interest does she receive after 3 years?

Answer\$ [3]

5 (a) There are 3 girls and 2 boys standing in a straight line. Find the number of possible orders in each of the following cases.

(i) No girls are next to each other.

Answer [2]

(ii) The 2 boys are not next to each other.

Answer [2]

(b) 12 people, including Anjie and Bubay, are divided into 3 groups of 4 people. Anjie and Bubay must not be in the same group.

Find the number of ways in which the 3 groups can be selected.

Answer [2]

6 (a) Shahnoza is training for a marathon. In the first week she runs 10km. Then each week she runs a distance that is 10% greater than the week before.

The total distance that Shahnoza has run by the end of n whole weeks is more than 200km. Find the smallest possible value of n .

Answer [5]

(b) A geometric progression has 1st term a and common ratio r , where $a \neq 0$ and $r \neq 1$. The 1st, 2nd and 3rd terms of the geometric progression are the 1st, 3rd and 7th terms of an arithmetic progression. Find the value of r .

Answer [5]

7 (a) Solve the inequality $3x^2 - 12x + 16 > 3x + 4$

Answer [4]

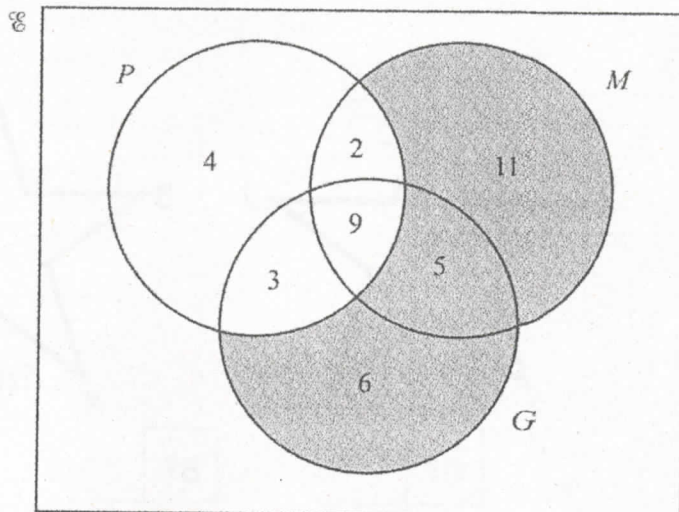
(b) Write $3x^2 - 12x + 16$ in the form $a(x + b)^2 + c$ where a , b and c are integers.

Answer [3]

(c) Solve the equation $\frac{|4x-5|}{7} = 1$.

Answer [3]

8 The Venn diagram shows the number of students in a class of 40 who study physics (P), mathematics (M) and geography (G).



(a) Use set notation to describe the shaded region.

Answer..... [3]

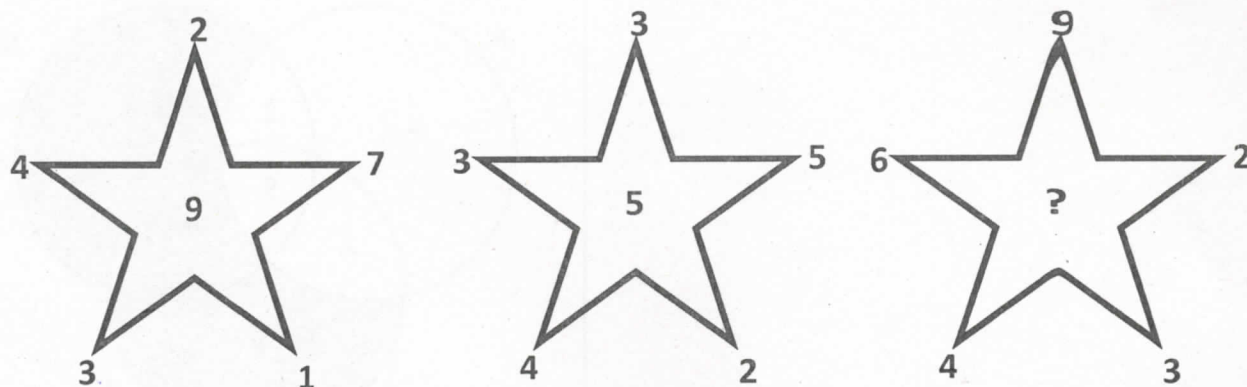
(b) Find $n((P \cap G) \cup M')$.

Answer..... [2]

(c) A student is chosen at random from those studying geography. Find the probability that this student also studies physics or mathematics but not both.

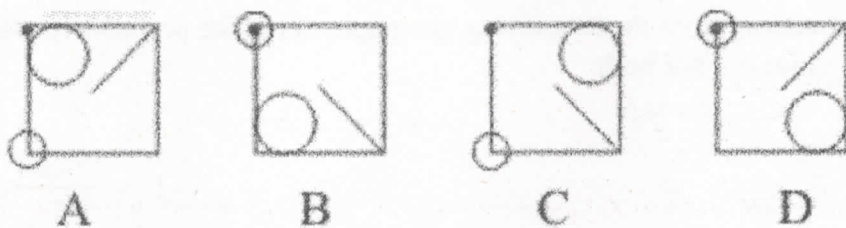
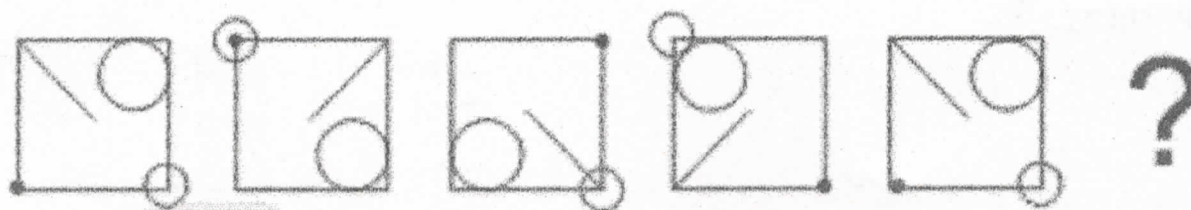
Answer..... [5]

9 a) Which number replaces the question mark and completes the puzzle?



Answer..... [4]

b) What comes next? Justify your answer.

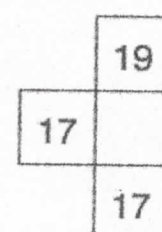
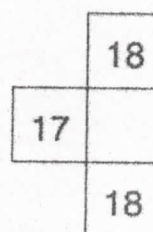
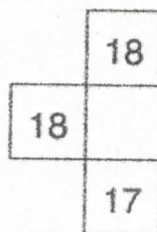
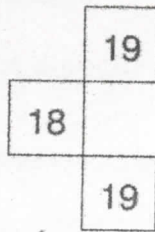


Answer..... [6]

10 a)

20	22	19	21
17	19	16	?
19	21	?	20
16	18	15	?

Which is the missing section?



Answer..... [4]

b) 1, 101, 15, 4, 29, -93, 43, -190, ? Justify your answer.

What number should replace the question mark?

Answer..... [6]