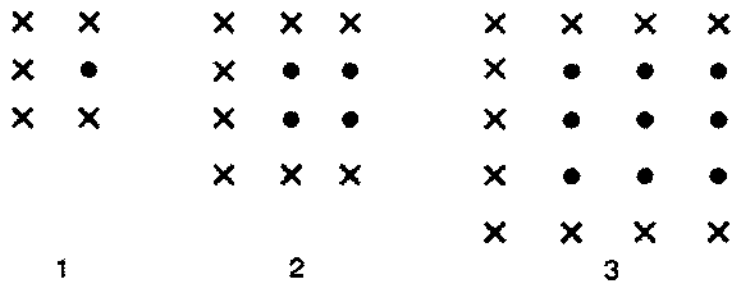


--	--	--	--	--	--

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

- 1 The diagram shows dots and crosses in the first 3 patterns.



- (a) Complete the table.

pattern	1	2	3	4
number of dots	1	4		16
number of crosses	5	8	11	
sum of crosses and dots	6	12	20	

[3]

- (b) Find

- (i) the number of crosses needed for pattern 45,

.....[2]

- (ii) the n th term for the sum of crosses and dots.

.....[3]



- 2 (a) Marofa has a bank balance of – M180 at the Automated Teller Machine (ATM) before making a deposit.

After he deposited some money into his account, his new balance is M1 630.

Calculate the amount of money he deposited into his account.

M..... [1]

- (b) Thoola Company pays its employee M220.00 for packaging 500-brick stack.

- (i) Find the number of 500-brick stacks packed if an employee is paid M1 100.

.....[2]

- (ii) The Company reserved M15 000 for packaging bricks.

Find the amount that remains after packaging a maximum number of 500-brick stacks.

M [3]

- (c) During retirement, Thoola Company gives its employee 28.95% of the accumulated amount and keeps the balance.

It then pays the employee M980 monthly until all the balance has been paid.

One employee has accumulated M40 000.

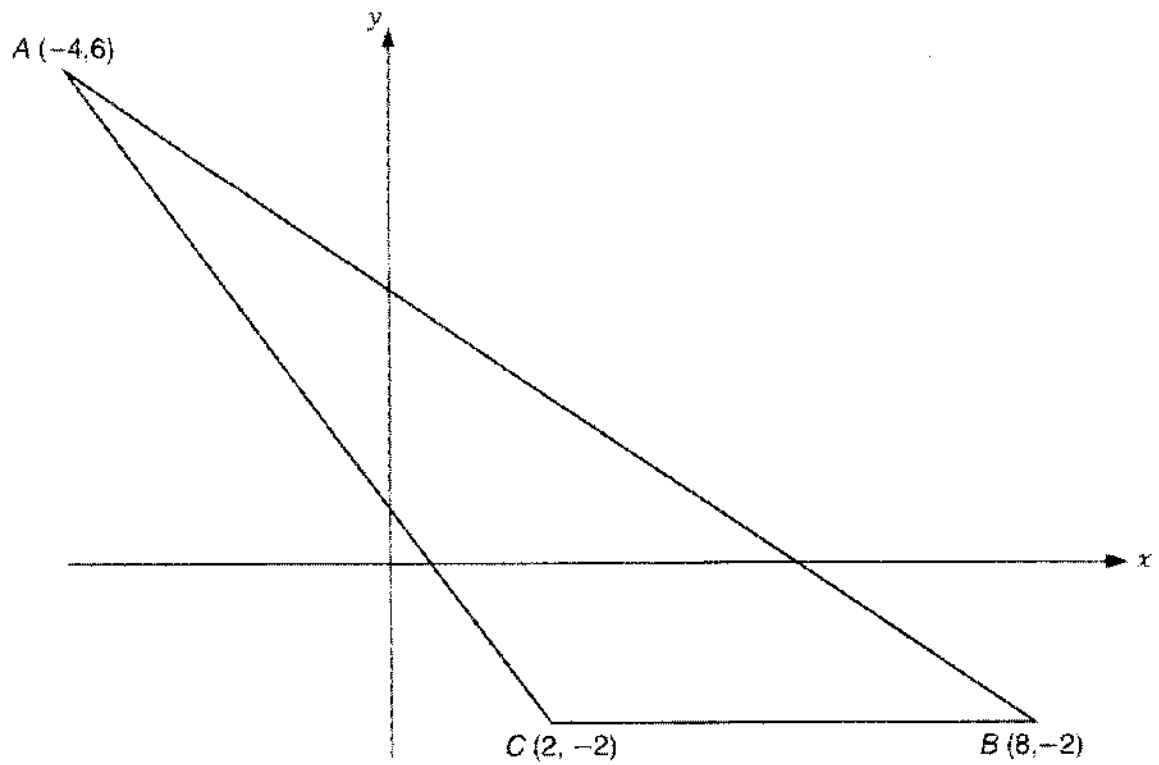
Calculate the number of months the Company will pay the employee after retirement.

..... months [3]



- 3 The xy -plane shows triangle ABC .

The coordinates of A , B and C are $(-4, 6)$, $(8, -2)$ and $(2, -2)$ respectively.



- (a) Calculate coordinates of the midpoint of line AB .

.....[2]



- (b) Find the equation of line AB .

Give your answer in the form $ax + by + c = 0$, where a, b and c are integers.

.....[3]

- (c) Calculate the area of the triangle ABC .

.....units² [2]



- 4 (a) Given that $a + b = 9$ and $a^2 + b^2 = 71$, find the value of $(ab)^3$.

.....[3]

- (b) Factorise completely.

$$x^2 - x - 20$$

.....[2]

(c) $T = 2\pi \sqrt{\frac{l}{g}}$

Find T when $l = 22.8$ and $g = 9.8$.

$T =$ [2]

- (d) Express as a single fraction in its simplest form.

$$\frac{a+2}{4} + \frac{a+3}{5}$$

.....[3]



- (e) The table shows the number of days and the number of people who visit the gym.

days	1	2	3	4	5
frequency	5	4	6	2	a

- (i) Find the greatest possible value of a such that the median is 3.

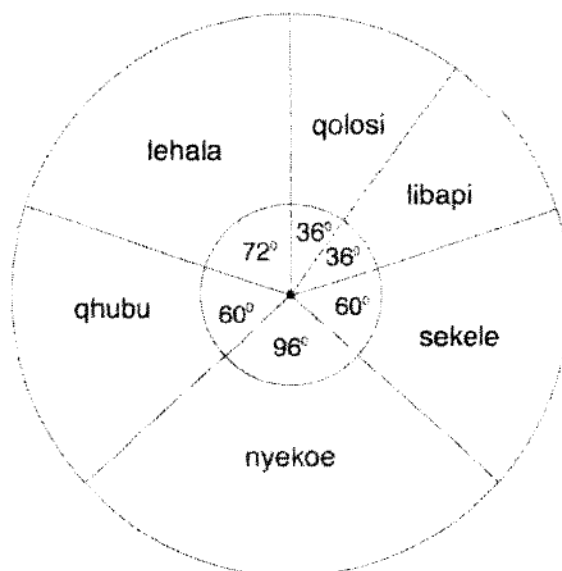
.....[1]

- (ii) Write an expression, in terms of a , for the mean.

.....[2]



- 5 In a class, 30 students were asked to state the type of traditional food they like most. The results are shown in a pie chart.



- (a) State the modal traditional food.

.....[1]

- (b) The results are then presented on the table.

Traditional food	lipabi	sekele	nyekoe	qhubu	lehala	qolosi
Number of students	3	5		5		3

Calculate the number of students who like nyekoe and lehala.

nyekoe

lehala[3]



- (c) A student is chosen at random from the class.

Find the probability that the student likes

- (i) lipabi,

..... [1]

- (ii) qhubu or qolosi.

..... [2]



- 6 Mookho repairs cell phones in three days.
 On day 1, she repaired x cell phones.
 On day 2, she repaired 3 cell phones fewer than day 1.
 On day 3, she repaired 3 times as many as day 2.

- (a) Write an expression in terms of x for the total number of cell phones repaired.
 Write your answer in its simplest form.

.....[2]

- (b) Given that there were 33 cell phones repaired in three days,
 find the number of cell phones repaired on day 1.

.....[3]

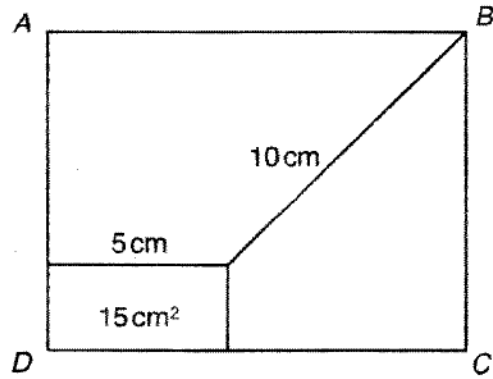
- (c) The cost of materials used on day 1 was M900.
 She charged Mk per cell phone.

Write an expression, in terms of k , for the percentage profit Mookho made on day 1.

.....%[2]



- 7 (a) The diagram shows a square $ABCD$ with a rectangle whose area is 15 cm^2 . Two other measures, 5 cm and 10 cm , are also shown.



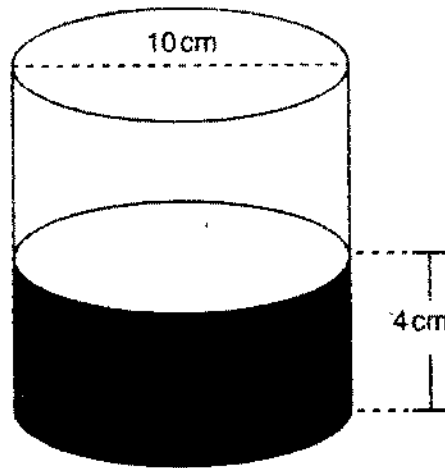
NOT TO
SCALE

Find the length of the side of a square $ABCD$.

.....cm [3]



- (b) The diagram shows a cylindrical container of diameter 10 cm.
It contains water to the depth of 4 cm.



NOT TO
SCALE

- (i) Calculate the area of the container that is in contact with water.

..... cm² [3]

- (ii) A solid cube of 6 cm sides is immersed into the cylinder.
Calculate the new height of the level of water in the cylinder.

..... cm [3]



- 8 (a) Simplify the ratio.

$$0.35 : \frac{2}{5} : \frac{3}{8}$$

..... [2]

- (b) The population of people correct to 2 significant figures is 37 000.

Complete the inequality.

..... $\leq$ 37 000 $<$ [2]

- (c) Thandi invests M50 000 in bank A and M40 000 in bank B.

Bank A offers 7.5% simple interest per annum.

Bank B offers 3% compound interest per annum.

- (i) Show that Thandi's investment is M61 250 at the end of 3 years at bank A.

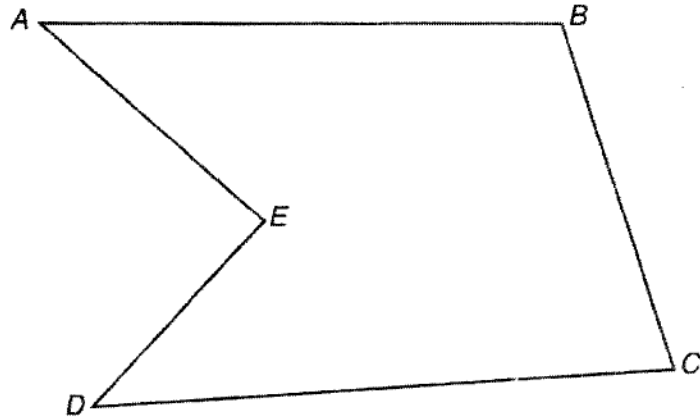
[2]

- (ii) Calculate the interest Thandi receives at the end of 3 years from bank B.

M..... [4]



- 9 (a) The diagram $ABCDE$ represents a garden field.



- (i) Measure and write the reflex angle AED .

.....° [1]

- (ii) Construct the locus of points, inside the field, that are equidistant from

I AE and DE , [2]

II A and B . [1]

Trees are to be planted in the field such that they are closer to A than B and closer to DE than AE .

Show, by shading, the possible region for the trees. [1]

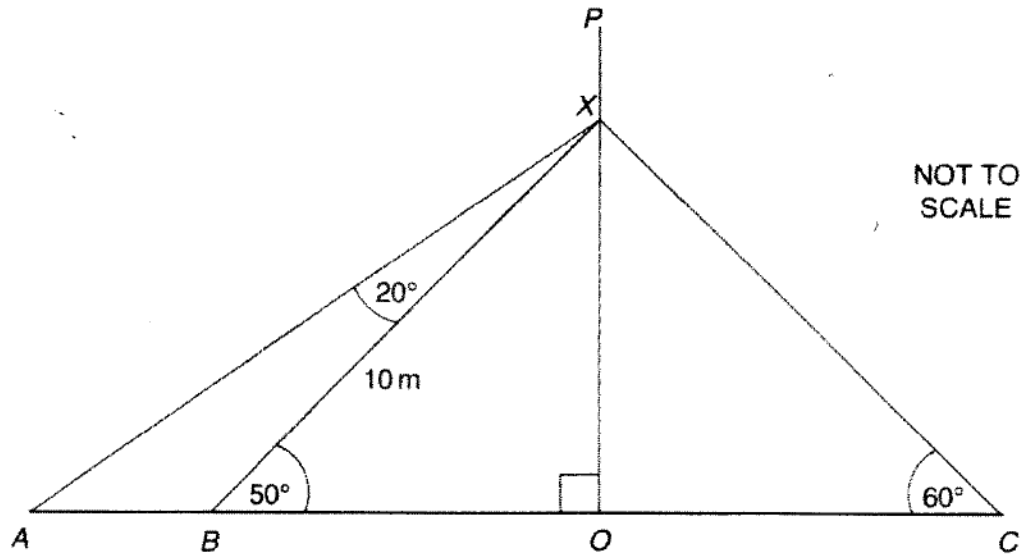
- (b) The distance from village P to village Q is 50 km.
A cyclist moved from P to Q at a speed of 15 km/h.

Calculate the time, in hours and minutes, taken by the cyclist.

..... hoursminutes [3]



- 10 The diagram shows the vertical pole OP supported by three ropes AX , BX and CX .
 $BX = 10\text{ m}$, $\angle OBX = 50^\circ$, $\angle XCO = 60^\circ$ and $\angle BXA = 20^\circ$.



Calculate

- (a) the size of angle PXC ,

..... $^\circ$ [1]

- (b) the length BO ,

.....m [2]

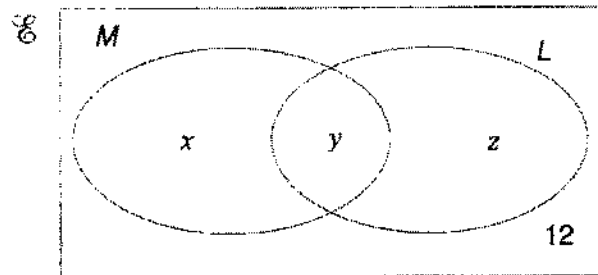
- (c) the length AX .

.....m [4]



- 11 The office invited 40 people for an interview.
 10 were called using mobile phone M ,
 20 were called using landline phone L ,
 12 were neither contacted by landline phone nor mobile phone.

The Venn diagram represents this information.



- (a) Find the values of x , y and z in the Venn diagram.

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

$$z = \dots\dots\dots [4]$$

- (b) Find

(i) $n(M \cup L)'$,

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

(ii) $n(M' \cup L)$.

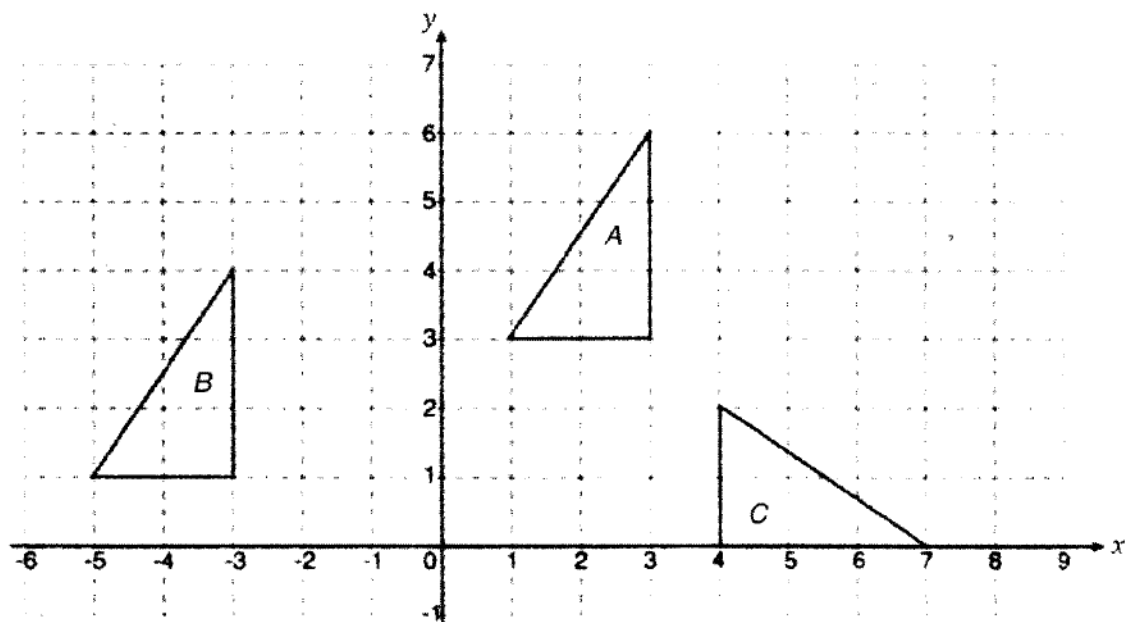
$$\dots\dots\dots [1]$$

- (c) Use set notation to represent the number of people who were contacted by landline phone only.

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



- 12 The xy – plane shows three triangles A , B and C .



- (a) Describe fully a single transformation that maps

- (i) A onto B ,

.....
[2]

- (ii) A onto C .

.....
[3]

- (b) Enlarge B with centre $(1, 1)$ by scale factor $\frac{1}{2}$. [2]



BLANK PAGE



BLANK PAGE



BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (ECOL) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

