Name:----------

Teacher:----------

SYDNEY TECHNICAL HIGH SCHOOL

MATHEMATICS 2012

Year 7 Term 3 Common Test

TIME ALLOWED 65 min

Section 1: Place a cross over your selected answer

1. A B C D	16. A B C D	31. A B C D
2. A B C D	17. A B C D	32. A B C D
3. A B C D	18. A B C D	33. A B C D
4. A B C D	19. A B C D	34 A B C D
5. A B C D	20. A B C D	35 A B C D
6. A B C D	21. A B C D	36 A B C D
7. A B C D	22. A B C D	37 A B C D
8. A B C D	23. A B C D	38 A B C D
9. A B C D	24. A B C D	39 A B C D
10. A B C D	25. A B C D	40 A B C D
11. A B C D	26. A B C D	
12. A B C D	27. A B C D	
13. A B C D	28. A B C D	
14. A B C D	29. A B C D	
15. A B C D	30. A B C D	

Section 2:

1.....	4.....	7.....	10.....
2.....	5.....	8.....	
3.....	6.....	9.....	

SYDNEY TECHNICAL HIGH SCHOOL

YEAR 7

MATHEMATICS

TERM 3 COMMON TEST 2012

Name:.....Teacher:.....

Instructions:

Total marks 50.

Time allowed 65 minutes.

No calculator allowed.

Each question is worth 1 mark.

Section 1

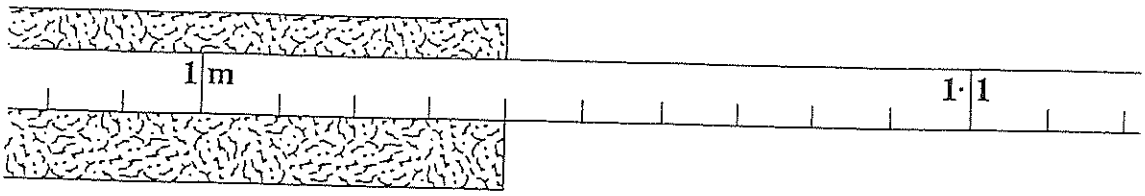
For questions 1 to 40, place a cross over the correct answer to the multiple choice questions on the answer sheet. Any working can be done on the question sheet.

Section 2

Write your answer on the answer sheet. Any working can be done on the question sheet.

Section 1

1.



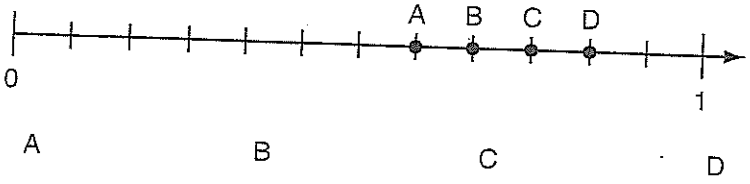
Bill is using a tape-measure to find the length of a piece of wood.

The length of the wood *in metres* is

(A) 1·04 (B) 1·05 (C) 1·4 (D) 1·5

2.

Which position is closest to $\frac{2}{3}$ on this number line?



A B C D

3.

Which of these shows the **smallest** change in temperature?

A. from –10 °C to –5 °C
B. from –4 °C to 0 °C
C. from –3 °C to 3 °C
D. from 4 °C to 6 °C

4.

The petrol tank in Gina's car is empty.
She buys \$72 worth of petrol at \$1.50 per litre.
Her car uses 8 litres of petrol per 100 km travelled.

Which calculation gives the number of kilometres travelled before the tank is empty again?

A. $72 \div 1.50 \times 8 \div 100$
B. $72 \div 1.50 \div 8 \times 100$
C. $72 \times 1.50 \div 8 \div 100$
D. $72 \times 1.50 \times 8 \times 100$

5.

Which number has the **largest** value?

A. $\frac{1}{6}$ B. $\sqrt{0.04}$ C. 0.18 D. $(0.4)^2$

6.

Which is the best estimate for $16 \times 34 + 68 - 91$?

A $10 \times 30 + 60 - 90$
B $10 \times 30 + 70 - 90$
C $20 \times 30 + 70 - 90$
D $20 \times 40 + 70 - 100$

7.

$\sqrt{200}$ is between

A. 10 and 12 B. 12 and 14 C. 14 and 20 D. 50 and 150

8.

Sam buys 16 tickets to a concert.
The tickets cost $27 each.

Which of these could Sam use to calculate the total cost?

A. $(27 \times 10) + 6$
B. $(27 \times 10) \times 6$
C. $(20 \times 10) + (7 \times 6)$
D. $(27 \times 10) + (27 \times 6)$

9.

The table shows the times of 3 of the first 4 swimmers in a race.

1st place	25.38 seconds
2nd place	25.83 seconds
3rd place	?
4th place	26.29 seconds

The time of the swimmer in 3rd place could be

A. 25.78 seconds.
B. 25.91 seconds.
C. 26.31 seconds.
D. 26.92 seconds.

10

The number of people at a football game, rounded to the nearest thousand, was 46 000.
The actual number of people at this game could have been

(A) 45 095 (B) 45 489 (C) 45 761 (D) 46 584

11. In Australia 0·5% of people have a rare blood type.

There are 18 000 000 people in Australia.

How many have this rare blood type?

(A) 9 000 (B) 90 000 (C) 900 000 (D) 9 000 000

12. Tania is taping songs onto a 90-minute cassette tape.

She has used $\frac{1}{10}$ of the tape for rock music and $\frac{1}{3}$ for rap music.

The amount of time left on her cassette tape is

(A) 27 minutes (B) 39 minutes (C) 51 minutes (D) 54 minutes

13. A ticket costs $75.
A fee of 10% is added to the price.

Which calculation will give the new price?

A. $75 + 10$ B. $75 + 0.1$ C. 75×0.1 D. 75×1.1

14. Which of these is the largest?

(A) 40% (B) 0·07 (C) $\frac{3}{5}$ (D) 0·5

15. Bruce is cooking dinner.
The table shows the cooking times for his dinner.

	Cooking time
Chicken	1 hour 40 minutes
Potatoes	20 minutes
Peas	10 minutes

Bruce starts cooking the chicken at 5:10 pm.
He wants everything to finish cooking at the same time.

At what time should Bruce start cooking the peas?

A. 6:20 pm B. 6:30 pm C. 6:40 pm D. 6:50 pm

16. Geoff started work at 10:16 a.m. and finished at 5:03 p.m.

How long did he work?

(A) 5 hours 13 minutes

(B) 6 hours 47 minutes

(C) 7 hours 19 minutes

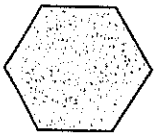
(D) 15 hours 19 minutes

17. When it is 11 am in Perth, it is 3 pm in Auckland on the same day. At 9 pm in Perth, Sophie phoned a friend in Auckland.

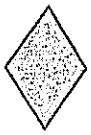
What was the time in Auckland when Sophie phoned?

A. 1 am B. 5 am C. 1 pm D. 5 pm

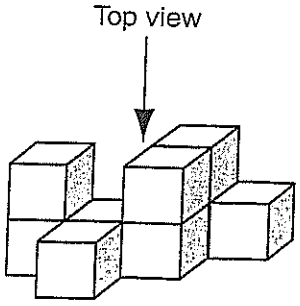
18. This regular hexagon has been made by putting together 3 identical smaller shapes.



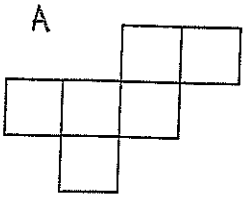
Which of these could be that smaller shape?

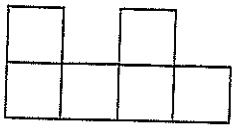
A.  B.  C.  D. 

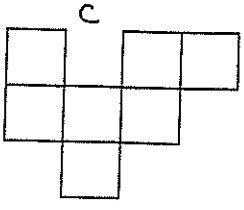
19. The object below is made from 9 cubes.

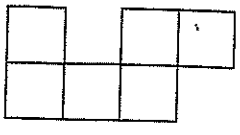


Which one of these shows the top view?

A 

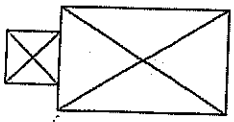
B 

C 

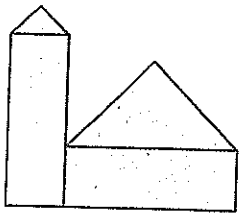
D 

20

The top view and front view of a building are shown.

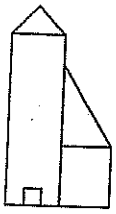


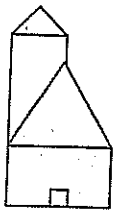
Top view

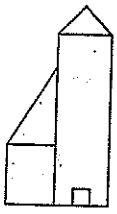


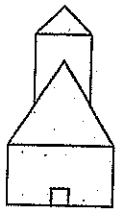
Front view

Which could be the side view of this building?

A. 

B. 

C. 

D. 

21.

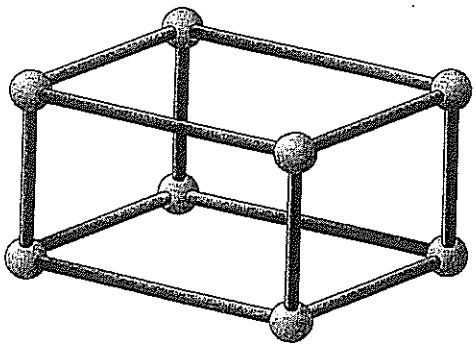
Which one of the following triangles is **impossible** to draw?

A. an isosceles triangle with one right angle
B. an equilateral triangle with one right angle
C. a scalene triangle with one obtuse angle
D. an isosceles triangle with three acute angles

22.

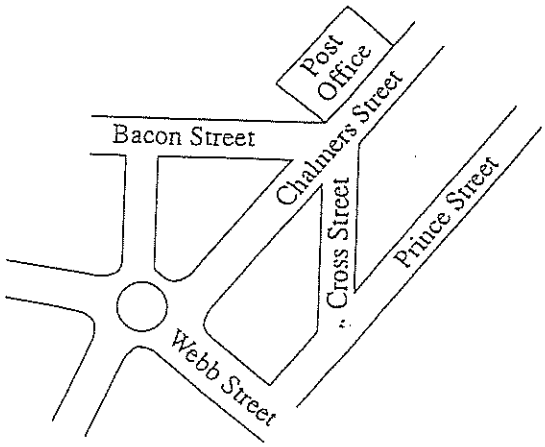
Ruth made this model using 8 foam balls for the vertices and 12 sticks for the edges.

How many foam balls and sticks would Ruth need to make a **square-based pyramid**?



A. 5 foam balls and 8 sticks
B. 5 foam balls and 6 sticks
C. 4 foam balls and 6 sticks
D. 6 foam balls and 9 sticks

23



The post office is in Chalmers Street. The town hall is in a street perpendicular to Chalmers Street.

The town hall is in

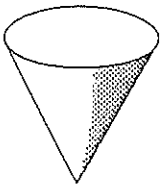
(A) Bacon Street

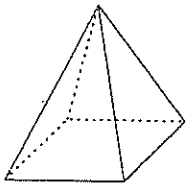
(B) Cross Street

(C) Prince Street

(D) Webb Street

24.





These two solids are

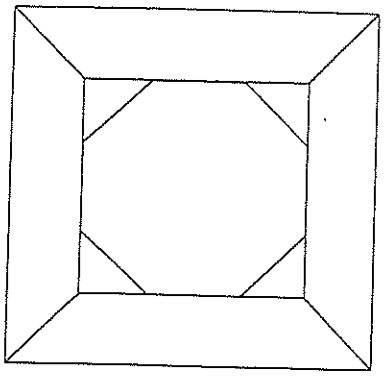
(A) a cone and a pyramid

(B) a cone and a prism

(C) a cylinder and a pyramid

(D) a cylinder and a prism

25.



The diagram shows the pattern on a bathroom tile.

Which shape is NOT used in this pattern?

(A) hexagon

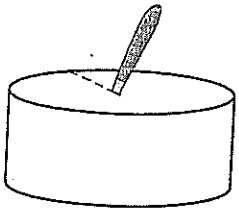
(B) octagon

(C) trapezium

(D) triangle

26.

A vertical cut is made with a knife all the way through the centre of a cylindrical cheese, as shown.

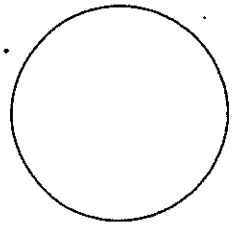


Which shows the shape of the cross-section made by the cut?

A.

B.

C.

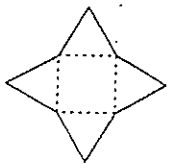


D.

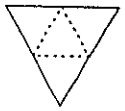
27.

Which diagram is the net of a triangular prism?

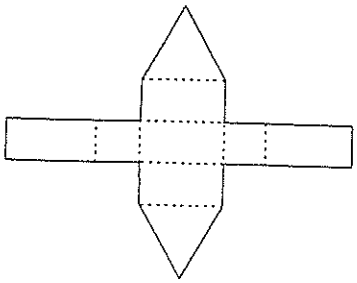
(A)



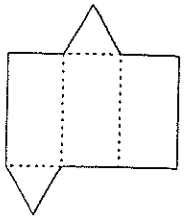
(B)



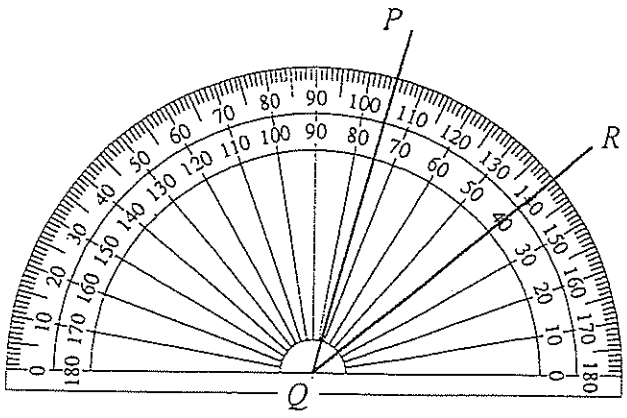
(C)



(D)



28.

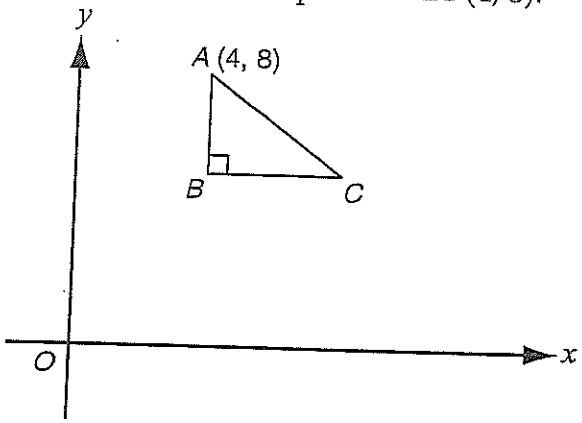


The size of angle PQR is

(A) 25° (B) 35° (C) 45° (D) 65°

29.

The coordinates of point A are (4, 8).



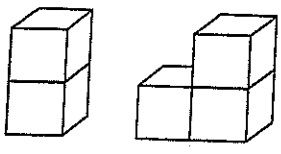
AB is parallel to the y axis.

If $AB = 3$, $BC = 4$ and $AC = 5$, what are the coordinates of point C?

A. (8, 5) B. (5, 8) C. (1, 8) D. (8, 1)

30.

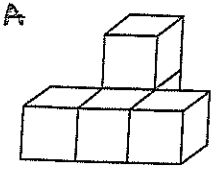
Kevin made these 2 objects by gluing cubes together face-to-face.



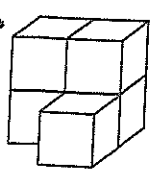
He then joined the 2 objects together.

Which object below could **not** be made using Kevin's 2 objects?

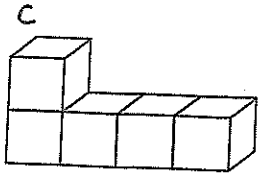
A



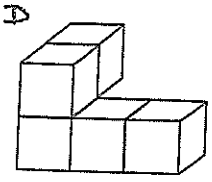
B



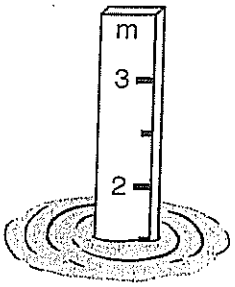
C



D



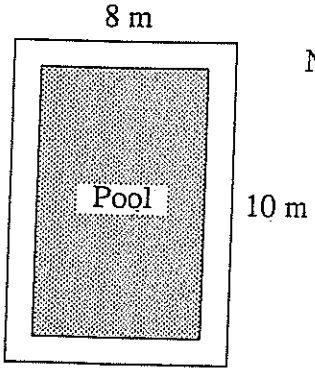
31 This pole measures the depth of water in a river.



Approximately how deep is the river?

A 15 centimetres B 1.05 metres C 1.5 metres D 15 metres

32



NOT TO SCALE

A rectangular swimming-pool has a tiled path around it.

The path is 1 m wide.

The perimeter of the pool in metres is

(A) 14

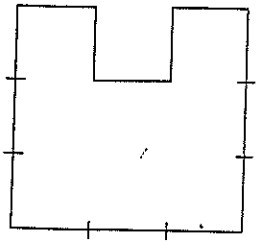
(B) 16

(C) 28

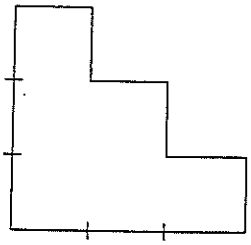
(D) 32

33 Which shape has the largest perimeter?

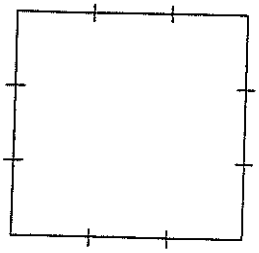
(A)



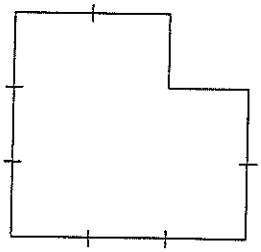
(B)



(C)



(D)



34

WATER USED IN 8 MINUTE SHOWER

Type of shower	*Litres of water*
Ordinary shower	120
Water-saving shower	80

Jenny has an 8 minute shower each morning and each night using an ordinary shower.

She installs a water-saving shower.

How much water does she save in one week?

(A) 40 L (B) 280 L (C) 400 L (D) 560 L

35

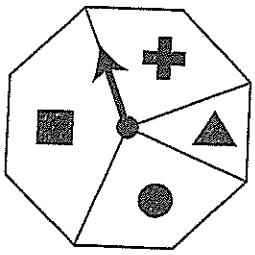
Jane buys a 1.25 L bottle of drink and a 375 mL can of drink.

How much drink does she buy?

A. 376.25 mL B. 500 mL C. 1.525 L D. 1.625 L

36

Voula spins the arrow 100 times.



Which table is **most** likely to show her results?

A.

Shape section	Number of spins
✚	15
▲	10
●	15
■	60

B.

Shape section	Number of spins
✚	10
▲	25
●	25
■	40

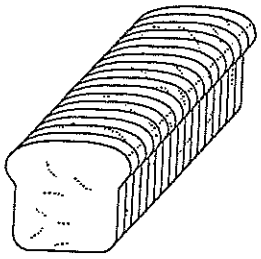
C.

Shape section	Number of spins
✚	25
▲	10
●	25
■	40

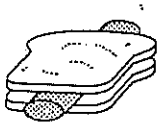
D.

Shape section	Number of spins
✚	25
▲	25
●	25
■	25

37



Loaf of bread



Sausage sandwich

A loaf of bread has 22 slices. A sausage sandwich needs 2 slices of bread.

20 people each have 2 sausage sandwiches.

The number of loaves needed is

(A) 2 (B) 3 (C) 4 (D) 5

38

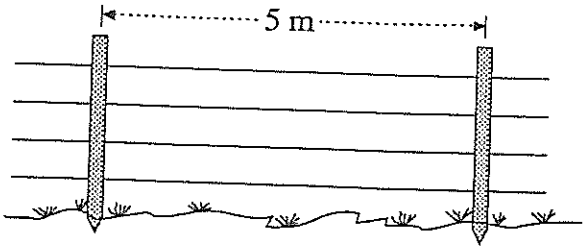
Tim had $32 to spend while on holiday.
He spent exactly the same amount each day.
At the end of the holiday he had no money left.

Which of these could be the amount he spent each day?

A. $6 B. $5 C. $4 D. $3

39

The diagram below shows a section of a fence that is 40 metres long. The fence has posts 5 metres apart with a post at each end. Four strands of wire run the length of the fence.



The materials needed to build this fence are

(A) 8 posts and 40 metres of wire.

(B) 8 posts and 160 metres of wire.

(C) 9 posts and 40 metres of wire.

(D) 9 posts and 160 metres of wire.

40

This table is a training schedule for a walking group.

Week number	Week 1	Week 2	Week 3	Week 4
Daily distance	5 km	6 km	8 km	?

The daily distance increases from week to week. It follows the rule:

Double the previous week's daily distance and subtract 4 km.

What is the daily distance for Week 4?

A. 9 km B. 10 km C. 12 km D. 20 km

Section 2

1. Helen has 24 red apples and 12 green apples.

   What fraction of the apples are green?

2. Steven cuts his birthday cake into 8 equal slices.
   He eats 25 % of the cake in whole slices.

   How many slices of cake are left?

3. Three friends were making cupcakes for a party.
   Josh made 10 more cakes than Alice.
   Alice made 8 more cakes than Tom.
   In total they made 62 cakes.

   How many cakes did **Tom** make?

4. A copier prints 1200 leaflets.
   One-third of the leaflets are on yellow paper and the rest are on blue paper.
   There are smudges on 5% of the blue leaflets.

   How many blue leaflets have smudges?

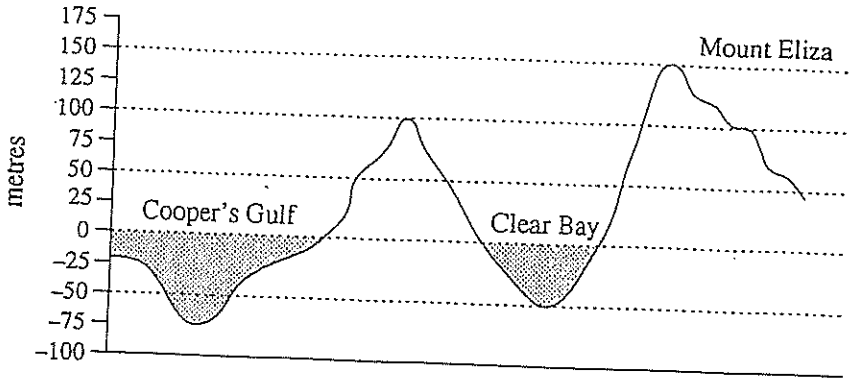
5. Two numbers added together equal 1.
   The two numbers multiplied together equal –30.

   What are the two numbers?

6. A number is multiplied by itself and then 9 is added.
   The answer is 13.

   What is the number?

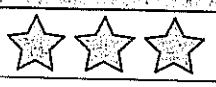
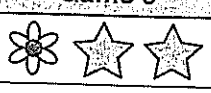
7.



What is the difference in height between the highest point on Mount Eliza and the lowest point in Cooper's Gulf.

8.

Elli was playing a video game.
In the game she had to collect objects that are worth points.
The pictures show how many points she scored in three games.

Game 1	Game 2	Game 3
		
170 points	150 points	120 points

In Game 4 she collected these three objects: 

How many points did she score in Game 4?

9.

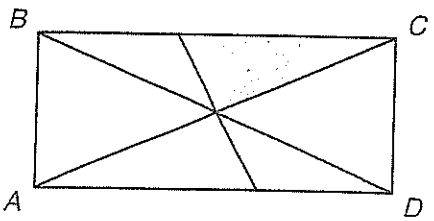
A jockey rode a horse for 1200 metres.
The time for each 400 metres is shown in the table.

Distance	Time
First 400 metres	29 seconds
Next 400 metres	27 seconds
Last 400 metres	24 seconds

What was the average speed for the 1200 metre ride, in metres per second?

10.

ABCD is a rectangle.
A line is drawn through the point where the two diagonals intersect.
Two triangles are then shaded.



What fraction of the rectangle is shaded?

Name: Solutions

Teacher:----------

SYDNEY TECHNICAL HIGH SCHOOL

MATHEMATICS 2012

Year 7 Term 3 Common Test

TIME ALLOWED 65 min

Section 1: Place a cross over your selected answer

1. **A** B C D	16. A **C** D	31. A B **D**
2. A **C** D	17. **B** C D	32. A B **D**
3. A B **C**	18. A B **D**	33. **B** C D
4. A **C** D	19. **B** C D	34 A B **C**
5. A **C** D	20. A B **C**	35 A B **C**
6. A B **D**	21. A **C** D	36 A B **D**
7. A B **D**	22. **B** C D	37 A B **D**
8. A B **C**	23. A B **C**	38 A B **D**
9. A **C** D	24. **B** C D	39 A B **C**
10. A B **D**	25. **B** C D	40 A B **D**
11. A **C** D	26. A B **C**	
12. A B **D**	27. A B **C**	
13. A B **C**	28. A **C** D	
14. A B **D**	29. **B** C D	
15. A B **D**	30. **B** C D	

Section 2:

1. $12/36 = Y_3$
2. 6
3. 12
4. 40
5. $6 - 5$
6. 2 OR -2 either
7. 225m
8. 145
9. 15m/s
10. $\frac{1}{4}$

no units needed

Name:_____ Teacher:_____

SYDNEY TECHNICAL HIGH SCHOOOL

MATHEMATICS

YEAR 7

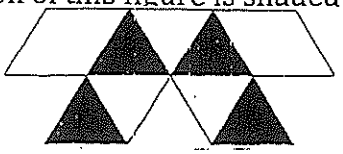
Yearly Exam 2012

Time allowed: 70 minutes

Instructions:

1. Attempt all questions.
2. Calculators may not be used
3. Show all necessary working

Section	Topic	Total Marks
A	Number	15
B	Algebra	15
C	Measurement	15
D	Directed Number	15
E	Shapes/Geometry	15
Problems	Miscellaneous	5
TOTAL		80

SECTION A NUMBER	Answers
1. Express 0.64 as a simplified fraction	
2. What fraction of this figure is shaded? 	
3. Evaluate $3 \div 0.04$	
4. Convert $\frac{3}{8}$ into a decimal	
5. $23 \times (98 - 17)$ has the same value as a) $(23 \times 98) - 17$ b) $(23 \times 98) - (17 \times 98)$ c) $23 \times (98 - 23 \times 17)$ d) $(23 \times 98) - (23 \times 17)$	
6. Which of these fractions has the greatest value? a) $\frac{3}{4}$ b) $\frac{19}{24}$ c) $\frac{5}{8}$ d) $\frac{13}{16}$	
7. The sum of the opposite faces of a standard 6 sided dice is always 7. Hannah rolls three dice. The sum of the top faces is 11. What is the sum of the three opposite faces?	

8.	Jade buys a 500g bag of beads at a market. Each bead has a mass of 0.48 grams. Which of these is the best estimate for the number of beads in a 500 gram bag? a) 100 b) 250 c) 1000 d) 2500	
9.	For the numbers 28 and 42, find the a) highest common factor b) lowest common multiple	 a) b)
10.	Evaluate $3\frac{2}{5} - 2\frac{1}{2}$	(2 marks)
11.	Evaluate $3\frac{3}{7} \div \frac{2}{3}$	(2 marks)
12.	Evaluate $\{24 - [18 \div (8 - 6)]\} \div 3$	

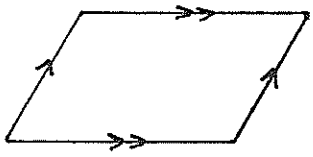
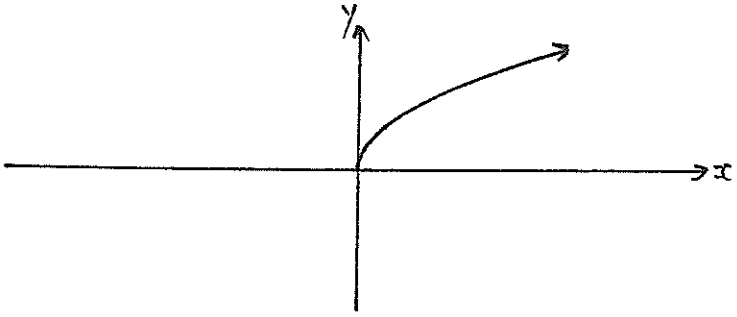
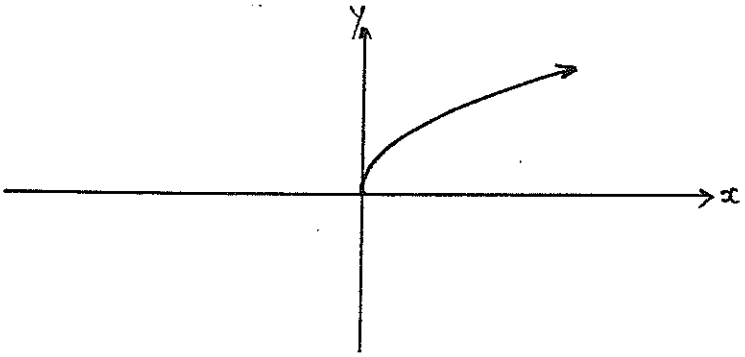
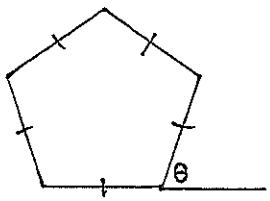
SECTION B ALGEBRA	ANSWERS
1. $6B + 4B =$	
2. Simplify $6x^6 \div 2x^3$	
3. Collect like terms $7a + 5b - 5a + 7b$	
4. Simplify $-3x^3 \times 5x^2$	
5. Simplify the fraction $\frac{4x^2}{16x}$	
6. Write an expression for the number which is 7 less than the product of $2x$ and 5	
7. If $x = 4$ and $y = -3$, find the value of $y - 3x$	
8. Find the rules relating x and y in a) b)	

a)

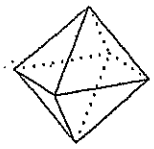
x	0	1	2	3
y	1	4	7	10

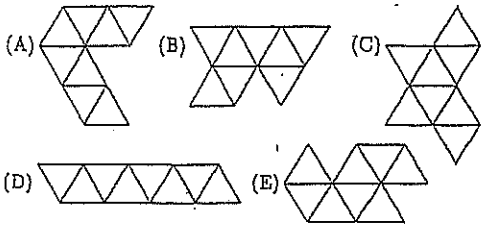
b)

x	0	1	2
y	5	3	1

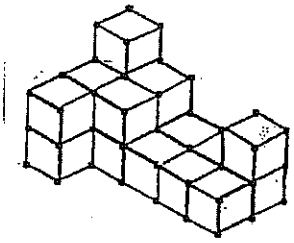
SECTION E PLANE/SOLID SHAPES and GEOMETRY	Answers
1. Name this type of quadrilateral and if it has axes of symmetry draw them in. 	(2 Marks)
2. Complete the following diagrams if a) there is line of symmetry across the x axis  b) there is point symmetry across (0,0) 	
3. i) Write down the name given to this type of polygon  ii) Find the size of angle θ	i) ii)

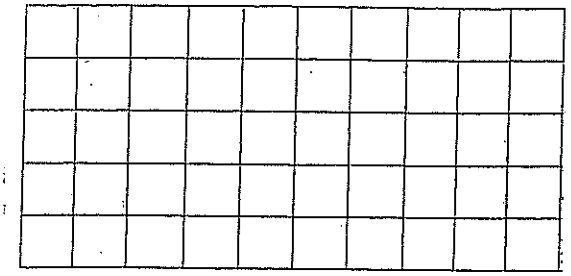
4. A net is a flat shape which can be folded along indicated lines to form a solid. A net for the solid shown at right is



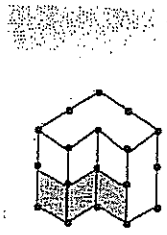


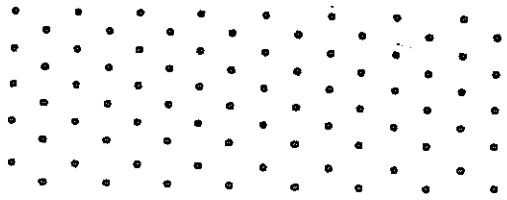
5. Draw the top view of this solid:



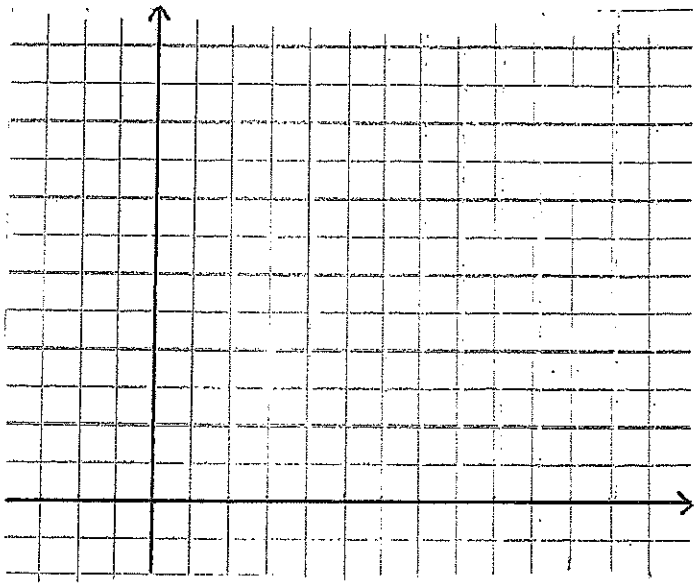


6. A cube is added to each shaded face. Draw the resulting solid (2 Marks)





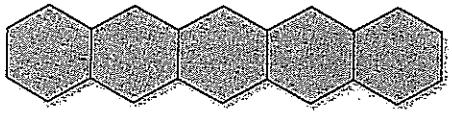
c) Graph and join the points from the table in part b) on the number plane below. Label the axes.



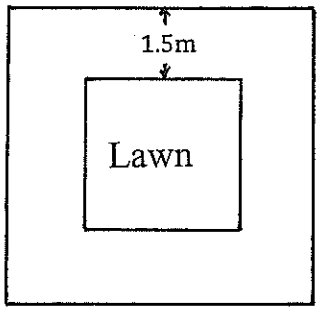
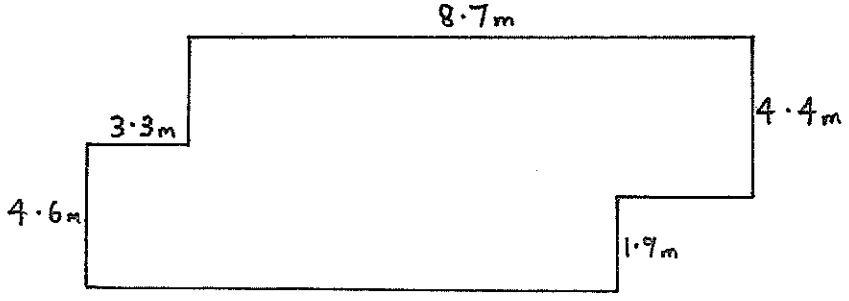
9. Simplify $(2d^3)^3$

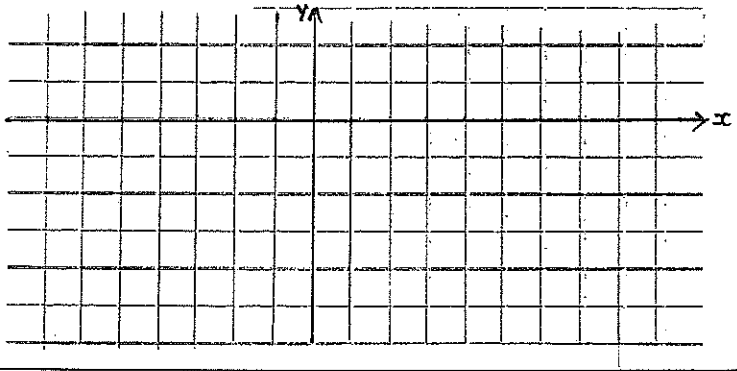
10. The cost C (in dollars) of hiring a bicycle for h hours is given by the formula $C = 6 + 2h$. If I have \$16 how long can I hire the bike for?

11. Sanjay has some tiles that are in the shape of a regular hexagon. The perimeter of each tile is 12cm. He arranges them in a row with pairs of edges touching as shown.



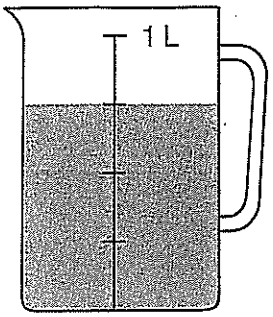
He keeps adding tiles in the same way until he has a row with a perimeter of 100cm. How many tiles are in Sanjay's row?

SECTION C MEASUREMENT	ANSWERS
1. How many metres in 3800cm?	
2. Convert $2\frac{3}{5}$ hours to minutes	
3. The time in Sydney is normally 10 hours ahead of London. London starts daylight saving time by pushing their clock one hour forward. If it is 6am Monday in Sydney, what time is it now in London?	
4. A square lawn with a perimeter of 20m is surrounded by a path 1.5m wide. What would be the perimeter of the outside of the path? 	(2 Marks)
5. The greatest number of Mondays which can occur in a 45 day period is a) 9 b) 6 c) 7 d) 8	
6. In the shape below, all angles are 90°. Find its perimeter 	(2 Marks)

SECTION D DIRECTED NUMBER	ANSWERS
1. $6-(-4)=$	
2. $-36 \div 9 =$	
3. $-5+5 \times -2=$	
4. $(-2)^5=$	
5. $\frac{7\times-4\times2}{-8} =$	
6. Plot A(2, -3) and B(0, -2) on the number plane below 	
7. If $a = -4$ and $b = -3$ find the value of i) ab^2 ii) $(ab)^2$	i) ii)
8. Two numbers have a product of 24 and a sum of -11. Find the numbers.	
9. Evaluate $(-22 + -6) \div (-5 - -1)$	

10. Insert $>$ or $<$ to make the following a true statement -5 $\square$ -3	
11. Solve $x^2 = 9$ .tions.	
12. The average minimum temperature over 5 days at Mt Selwyn was $-2°$. If the minimums on the first four days were $-3°, -1°, 0°$ and $-4°$, find the minimum on the 5th day.	
13. Solve $3 - 2x = 7$	

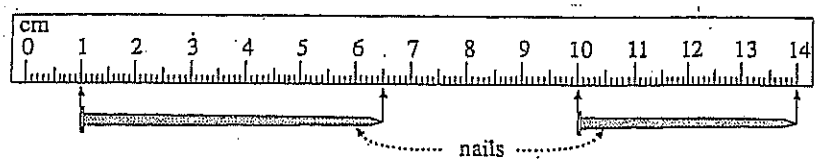
7. The jug shown weights 775g. When it is 1L full it weighs 1020g. Find the mass of the empty container.



8. Each sheet of paper in a stack of one million sheets is 0.2mm thick. The height of the stack in metres is:

a) 0.2 b) 2 c) 20 d) 200

9.



How much longer is one nail than the other?

a) 1.5cm b) 2.5cm c) 3.5cm d) 7.5cm

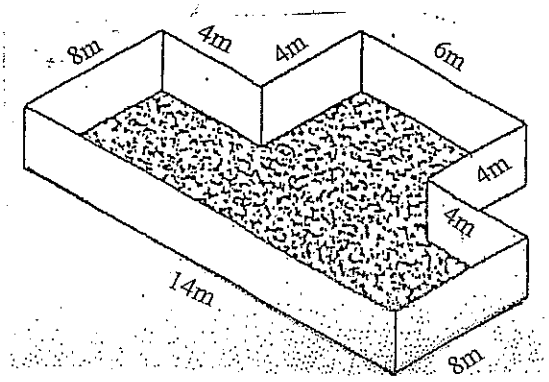
10. The diagram show a garden area surrounded by a fence.
All corners are right angles.
What is the area of the garden?

a) $52m^2$

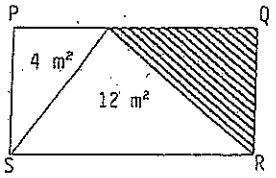
b) $112m^2$

c) $136m^2$

d) $168m^2$



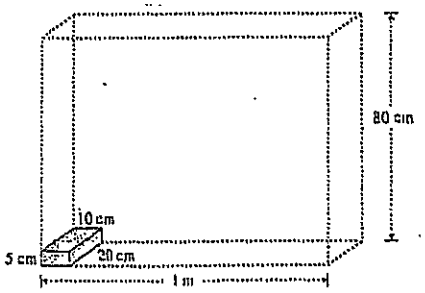
11.



PQRS is a rectangle.
Find the shaded area.

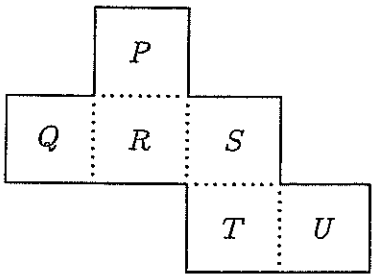
a) $4m^2$ b) $6m^2$ c) $8m^2$ d) $10m^2$

12. (2 Marks)

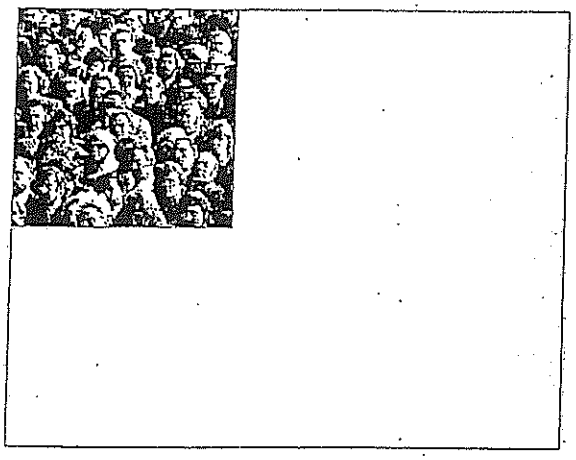


Marco is marking a stack of bricks 1m long and 80cm high, as shown.

How many bricks will be in the stack?

PROBLEMS	ANSWERS
1. A certain substance doubles its volume every minute. At 9am a small amount is placed in a container and at 10am the container just fills. The time at which the container was one quarter full was a) 9:15am b) 9:30am c) 9:45am d) 9:50am e) 9:58am	
2. When the diagram shown is folded to make a cube then the face marked U is opposite the face marked  a) P b) Q c) R d) S e) T	
3. In a football competition there are 9 teams. If each team plays each other twice then the total number of matches played is a)18 b)144 c) 36 d)72 e) 81	

4. A section of a photograph of a crowd is shown



The section contains about 50 people.

The best estimate for the number of people in the whole photograph is

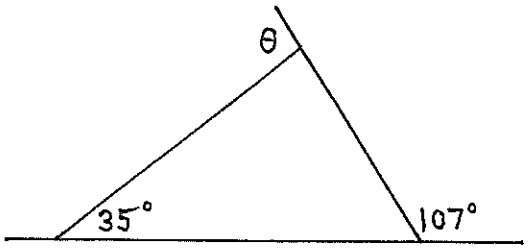
a)150 b)200 c)250 d)300

5. A clock is set correctly at 1pm. It loses 3 minutes every hour. What will the clock read when the correct time is 10am the next day?

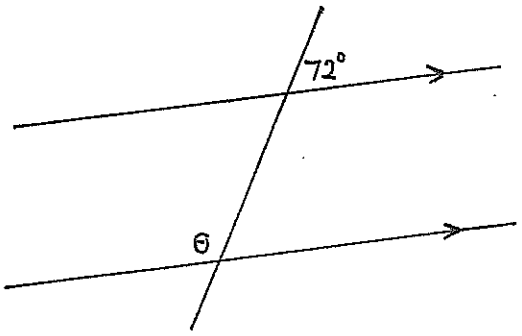
a)9:03 b)10:00 c)11:03 d)8:57 E) 11:06

7. Find θ

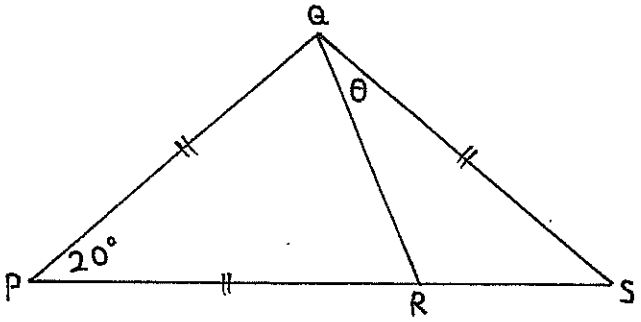
i)



ii)

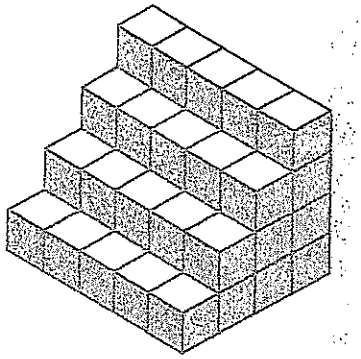


iii)



8. A diagonal of a square divides it into two triangles. What type of triangles are they?

9. Clive made this staircase by stacking blocks.
There are no gaps between blocks.



How many blocks in the staircase are **not** shown at all

a)26 b) 24 c) 15 d) 10

Name: SOLUTIONS Teacher:

SYDNEY TECHNICAL HIGH SCHOOOL

MATHEMATICS

YEAR 7

Yearly Exam 2012

Time allowed: 70 minutes

Instructions:

1. Attempt all questions.
2. Calculators may not be used
3. Show all necessary working

Section	Topic	Total Marks
A	Number	15
B	Algebra	15
C	Measurement	15
D	Directed Number	15
E	Shapes/Geometry	15
Problems	Miscellaneous	5
TOTAL		80

SECTION A NUMBER	Answers
1. Express 0.64 as a simplified fraction $\frac{64}{100}$	$\frac{16}{25}$
2. What fraction of this figure is shaded? 	$\frac{4}{11}$
3. Evaluate $3 \div 0.04$ $4\overline{)300}$	75
4. Convert $\frac{3}{8}$ into a decimal	0·375
5. $23 \times (98 - 17)$ has the same value as a) $(23 \times 98) - 17$ b) $(23 \times 98) - (17 \times 98)$ c) $23 \times (98 - 23 \times 17)$ d) $(23 \times 98) - (23 \times 17)$	d
6. Which of these fractions has the greatest value? a) $\frac{3}{4}$ b) $\frac{19}{24}$ c) $\frac{5}{8}$ d) $\frac{13}{16}$	d
7. The sum of the opposite faces of a standard 6 sided dice is always 7. Hannah rolls three dice. The sum of the top faces is 11. What is the sum of the three opposite faces?	10

8. Jade buys a 500g bag of beads at a market. Each bead has a mass of 0.48 grams. Which of these is the best estimate for the number of beads in a 500 gram bag? a) 100 b) 250 c) 1000 d) 2500	C
9. For the numbers 28 and 42, find the a) highest common factor b) lowest common multiple 28 → 4 7 → 2 2; 42 → 6 7 → 2 3 LCM = 2×2×3×7	a) ~~7~~ 14 b) 84
10. Evaluate $3\frac{2}{5} - 2\frac{1}{2}$ $3\frac{4}{10} - 2\frac{5}{10}$	(2 marks) $\frac{9}{10}$
11. Evaluate $3\frac{3}{7} \div \frac{2}{3}$ $\frac{24}{7} \times \frac{3}{2} = \frac{36}{7}$	(2 marks) $5\frac{1}{7}$
12. Evaluate $\{24 - [18 \div (8-6)]\} \div 3$ $15 \div 3$	5

SECTION B ALGEBRA	ANSWERS
1. $6B + 4B =$	10B
2. Simplify $6x^6 \div 2x^3$	$3x^3$
3. Collect like terms $7a + 5b - 5a + 7b$	$2a + 12b$
4. Simplify $-3x^3 \times 5x^2$	$-15x^5$
5. Simplify the fraction $\frac{4x^2}{16x}$	$\frac{x}{4}$
6. Write an expression for the number which is 7 less than the product of $2x$ and 5	$10x - 7$
7. If $x = 4$ and $y = -3$, find the value of $y - 3x$ $-3 - 3 \times 4$	-15
8. Find the rules relating x and y in a) b)	a) $y = 3x + 1$ b) $y = 5 - 2x$

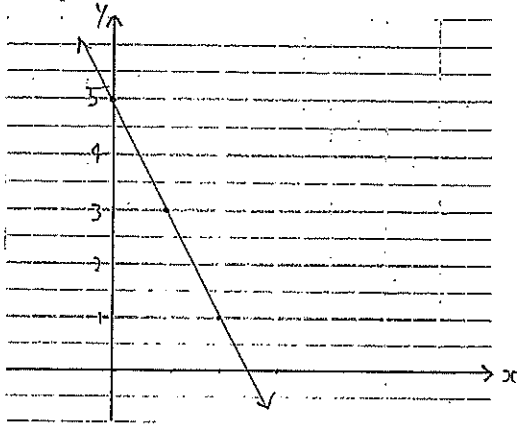
a)

x	0	1	2	3
y	1	4	7	10

b)

x	0	1	2
y	5	3	1

c) Graph and join the points from the table in part b) on the number plane below. Label the axes.



9. Simplify $(2d^3)^3$

8d⁹

10. The cost C (in dollars) of hiring a bicycle for h hours is given by the formula $C = 6 + 2h$. If I have $16 how long can I hire the bike for?

5 hours

11. Sanjay has some tiles that are in the shape of a regular hexagon. The perimeter of each tile is 12cm. He arranges them in a row with pairs of edges touching as shown.

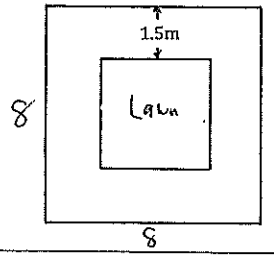
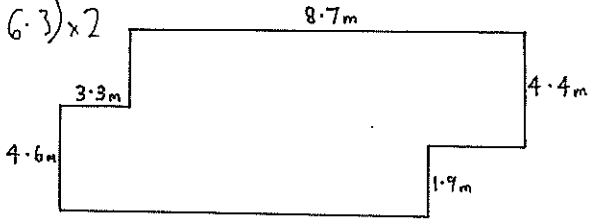
#	1	2	3	4	5
P	12	20	28	36	44

He keeps adding tiles in the same way until he has a row with a perimeter of 100cm. How many tiles are in Sanjay's row?

12

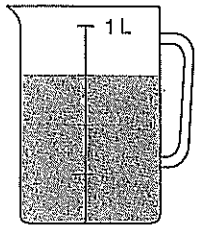
$P = 8n + 4$

$100 = 8n + 4$

SECTION C MEASUREMENT	ANSWERS
1. How many metres in 3800cm?	38
2. Convert $2\frac{3}{5}$ hours to minutes	156 min
3. The time in Sydney is normally 10 hours ahead of London. London starts daylight saving time by pushing their clock one hour forward. If it is 6am Monday in Sydney, what time is it now in London?	Sunday 9pm
4. A square lawn with a perimeter of 20m is surrounded by a path 1.5m wide. What would be the perimeter of the path? 	(2 Marks) 32m
5. The greatest number of Mondays which can occur in a 45 day period is a) 9 b) 6 c) 7 d) 8 1 8 15 22 29 36 43 M M M M M M M	7
6. In the shape below, all angles are 90°. Find its perimeter 	(2 Marks) 36·6m

(12 + 6·3) × 2

7. The jug shown weights 775g. When it is 1L full it weighs 1020g.
Find the mass of the empty container.



1020 − 775 = 245 × 4 = 980

1020 − 980

40g

8. Each sheet of paper in a stack of one million sheets is 0.2mm thick. The height of the stack in metres is:

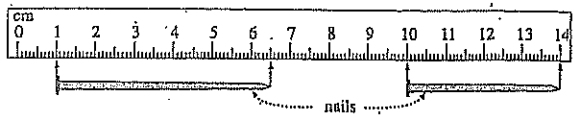
0·200000

a) 0.2 b) 2 c) 20 d) 200

200m

d)

9.



How much longer is one nail than the other?

5·5 − 4 = 1·5

a)1.5cm b) 2.5cm c) 3.5cm d) 7.5cm

9)

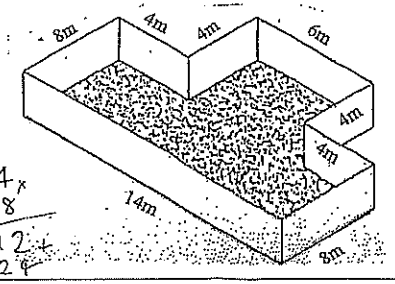
10. The diagram show a garden area surrounded by a fence.
All corners are right angles.
What is the area of the garden?

a) 52m²

b) 112m²

c) 136m²

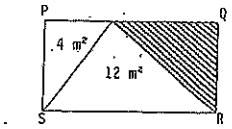
d) 168m²



14 × 8 = 112 + 24

c)

11.

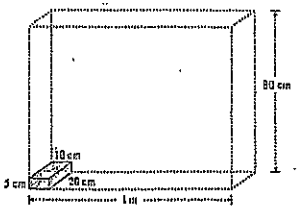


PQRS is a rectangle.
Find the shaded area.

a)4m² b) 6m² c) 8m² d) 10m²

c)

12.



0·8 ÷ (0·1 × 0·05) = 0·8 ÷ (0·005)

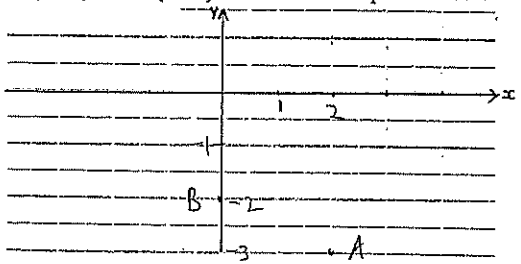
5)800

160

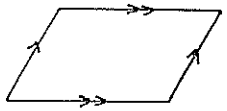
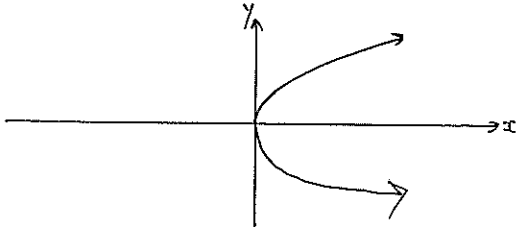
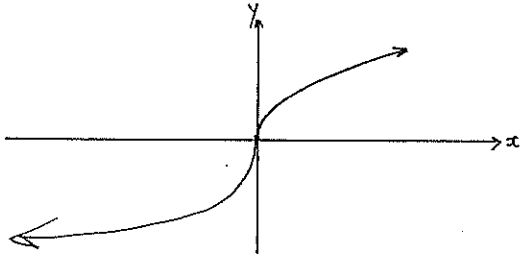
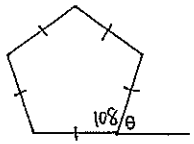
(2 Marks)

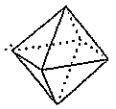
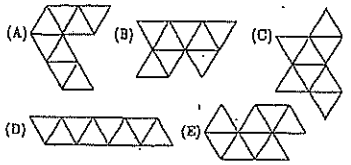
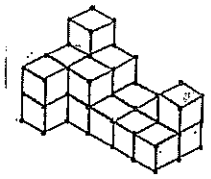
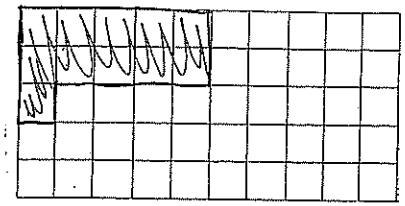
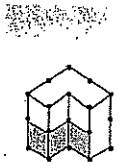
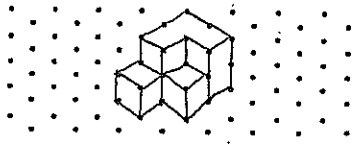
Marco is marking a stack of bricks 1m long and 80cm high, as shown.

How many bricks will be in the stack?

SECTION D DIRECTED NUMBER	ANSWERS
1. $6-(-4)=$	10
2. $-36 \div 9 =$	-4
3. $-5+5\times-2=$ $-5-10$	-15
4. $(-2)^5=$	-32
5. $\frac{7\times-4\times2}{-8}=$	7
6. Plot A(2, -3) and B(0, -2) on the number plane below 	
7. If $a=-4$ and $b=-3$ find the value of i) ab^2 ii) $(ab)^2$ $-4, 9$	i) -36 ii) 144
8. Two numbers have a product of 24 and a sum of -11. Find the numbers.	$-3, -8$
9. Evaluate $(-22+-6)\div(-5--1)$ $-28 \div -4$	7

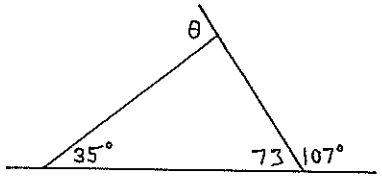
10. Insert $>$ or $<$ to make the following a true statement -5 $\boxed{<}$ -3	$<$
11. Solve $x^2=9$	$x=\pm3$
12. The average minimum temperature over 5 days at Mt Selwyn was $-2°$. If the minimums on the first four days were $-3°, -1°, 0°$ and $-4°$, find the minimum on the 5th day. -10	-2
13. Solve $3-2x=7$ $-2x=4$	$x=-2$

SECTION E PLANE/SOLID SHAPES and GEOMETRY	Answers
1. Name this type of quadrilateral and if it has axes of symmetry draw them in. 	(2 Marks) parallelogram no axes of symmetry
2. Complete the following diagrams if a) there is line of symmetry across the x axis  b) there is point symmetry across (0,0) 	
3. i) Write down the name given to this type of polygon  ii) Find the size of angle θ	i) regular pentagon ii) 72°

4. A net is a flat shape which can be folded along indicated lines to form a solid. A net for the solid shown at right is  	C
5. Draw the top view of this solid:  	
6. A cube is added to each shaded face. Draw the resulting solid  	(2 Marks)

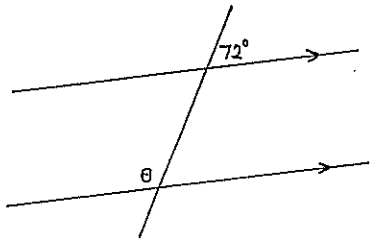
7. Find θ

i)



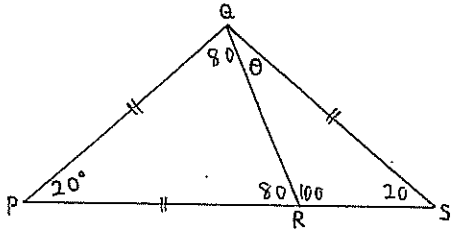
$\theta = 108^\circ$

ii)



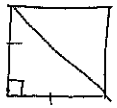
$\theta = 108^\circ$

iii)



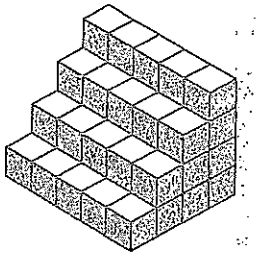
$\theta = 60^\circ$

8. A diagonal of a square divides it into two triangles. What type of triangles are they?



right angle isosceles triangle

9. Clive made this staircase by stacking blocks.
There are no gaps between blocks.

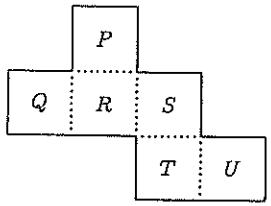


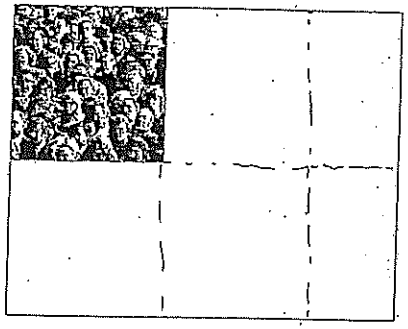
12 + 8 + 4 = 24

How many blocks in the staircase are not shown at all

a)26 b) 24 c) 15 d) 10

b)

PROBLEMS	ANSWERS
1. A certain substance doubles its volume every minute. At 9am a small amount is placed in a container and at 10am the container just fills. The time at which the container was one quarter full was a) 9:15am b) 9:30am c) 9:45am d) 9:50am e) 9:58am	e)
2. When the diagram shown is folded to make a cube then the face marked U is opposite the face marked  a) P b) Q c) R d) S e) T	c)
3. In a football competition there are 9 teams. If each team plays each other twice then the total number of matches played is a)18 b)144 c) 36 d)72 e) 81 4x 9x 2	d)

4. A section of a photograph of a crowd is shown  The section contains about 50 people. The best estimate for the number of people in the whole photograph is a)150 b)200 c)250 d)300	b)
5. A clock is set correctly at 1pm. It loses 3 minutes every hour. What will the clock read when the correct time is 10am the next day? 21 hours x 3 = 63 minutes a)9:03 b)10:00 c)11:03 d)8:57 E) 11:06	d)