SYDNEY TECHNICAL HIGH SCHOOL

MATHEMATICS

Year 8

Term 3 Common Test 2012

Total Time Allowed: 70 minutes

Section A: 25 mins.

Instructions:

- **Section A - Non calculator - Write your answer on the answer sheet. Any working can be done on the question sheet**
- **Section 2 – Calculators may be used - answer to the multiple choice questions on the enclosed answer sheet**
- Write using blue or black pen.
- Approved calculators may be used.
- Attempt all questions.

SECTION A

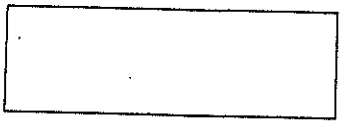
NON - CALCULATOR

15

1. A movie on television began at 8:30 p.m. and ended at 10:30 p.m. During this time the ratio *advertisements : movie* was 3 : 5.

What was the actual length of the movie in minutes?

2. $(x + 7)$ metres NOT TO SCALE



x metres

The perimeter of the rectangle is 60 metres.

Find x.

3. Solve $\frac{3x}{2} - 1 = 8$.

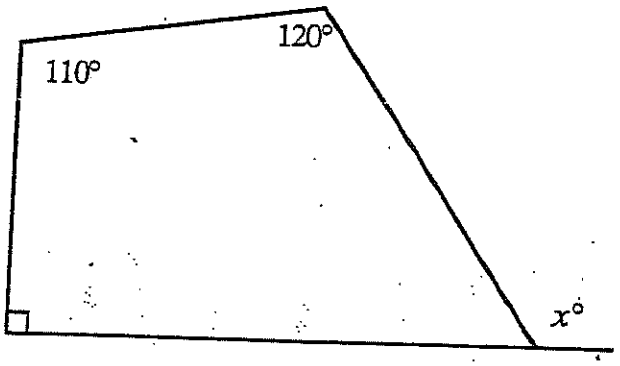
4.

Score	*Frequency*
5	x
8	7

What value of x would give a mean of 6 for the scores in this frequency distribution table?

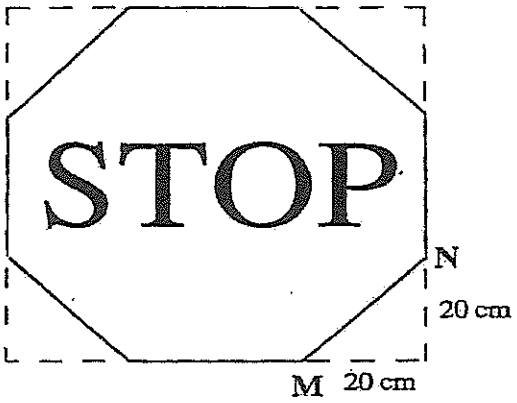
5. Evaluate $3y^2 + 6y - 7$ when $y = -5$.

6. Find the value of x:



7. Complete: $0{\cdot}36 = \frac{\square}{25}$

8.



Use Pythagoras's Theorem to calculate the length of the side MN of the stop sign.
Give your answer in exact form.

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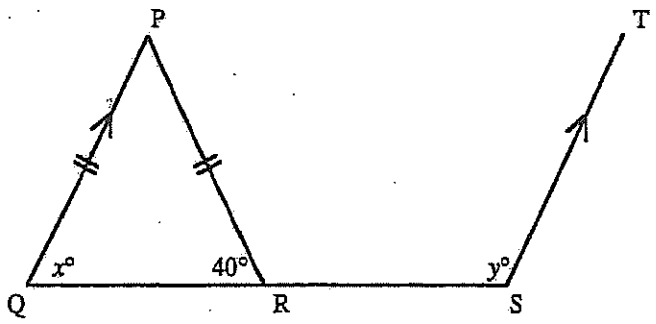
.....

.....

9.



Complete the following statements :

(a) $x = 40$ (.....)
(reason)

(b) $y =$ ..... (.....)
(reason)

10

Given $v = u + at$ and $v = 15$, a correct set of values for u, a, and t is

(A) $u = -5, \quad a = 10, \quad t = 2$

(B) $u = -5, \quad a = 10, \quad t = -2$

(C) $u = 5, \quad a = -10, \quad t = 2$

(D) $u = 5, \quad a = -10, \quad t = -2$

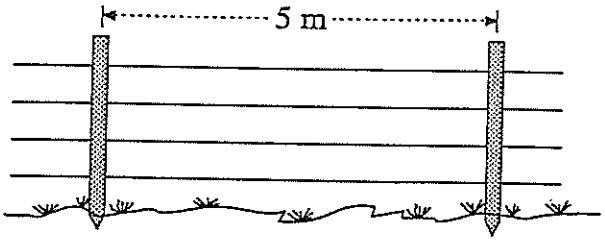
11

The ratio of girls to boys in a school is 5 : 6.

There are 90 girls at the school. How many boys are there?

12

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

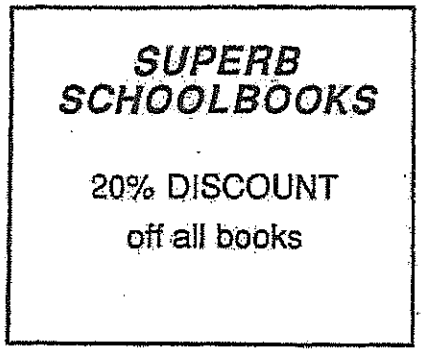
(A) 8 posts and 40 metres of wire.

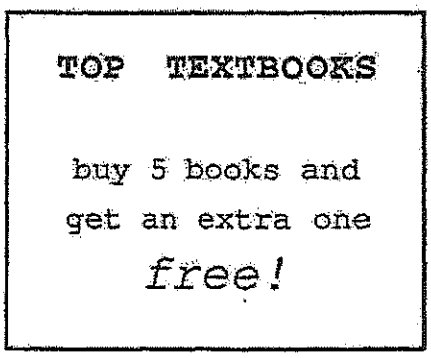
(B) 8 posts and 160 metres of wire.

(C) 9 posts and 40 metres of wire.

(D) 9 posts and 160 metres of wire.

Q13 Two booksellers make the following offers to schools:





Hammerhead High and Crimson College wish to buy copies of a Mathematics book. The book is listed at $15.50 by both booksellers before the deals.

(a) Hammerhead High buys 12 books from Superb Schoolbooks.
How much does the school pay?

(b) Crimson College wants 6 books from Top Textbooks.
How much will the books cost?

(c) Which bookseller gives better value for money? Give reasons for your answer.

.....

.....

.....

.....

Q1

When $x=-1$, $2x^3-(3x)^3=$

(A) -29 (B) 7 (C) 19 (D) 25

Q2

The solution of the equation $3(p-2)=5p+2$ is

(A) $p=-4$ (B) $p=-2$ (C) $p=-1$ (D) $p=1$

Q3

$a+b\div c\times 2$ is equal to

(A) $a+\frac{b}{c}\times 2$ (B) $\frac{a+b}{c}\times 2$ (C) $a+\frac{b}{c\times 2}$ (D) $\frac{a+b}{c\times 2}$

Q4

Cubes are to be stacked as shown below.

FIGURE 1
(1 cube)

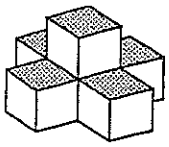


FIGURE 2
(6 cubes)

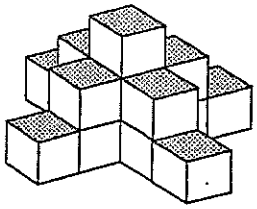


FIGURE 3
(15 cubes)

Which of the following expressions gives the number of cubes in the nth figure?

(A) $2n-1$ (B) $5n-4$ (C) $2n^2-n$ (D) $2n^2+3n+1$

Q5

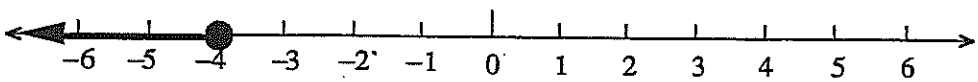
$3x-(x-3y)=$

(A) $2x-3y$ (B) $2x+3y$ (C) $3-3y$ (D) $3+3y$

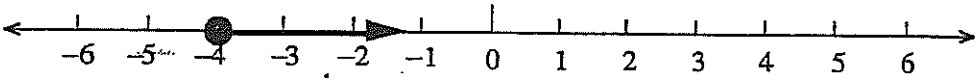
Q6

The solution to $5-x\leq 9$ is represented on the number line as:

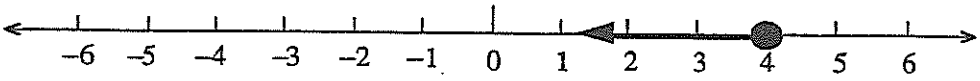
(A)



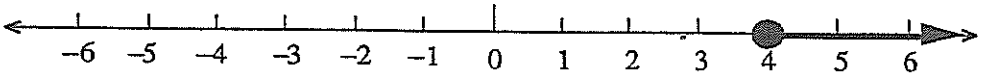
(B)



(C)



(D)



07

For the scores represented in the frequency distribution table, the mean is 5 and the mode is 4.

Score	*Frequency*
x	10
y	5

The range of the scores is

(A) 2 (B) 3 (C) 5 (D) 6

08

Score	*Frequency*
2	2
3	3
4	1
5	4
6	7
7	3
	20

The mean of this set of scores is 5. If another score of 5 is added to the set, which of these measures will change?

(A) mean

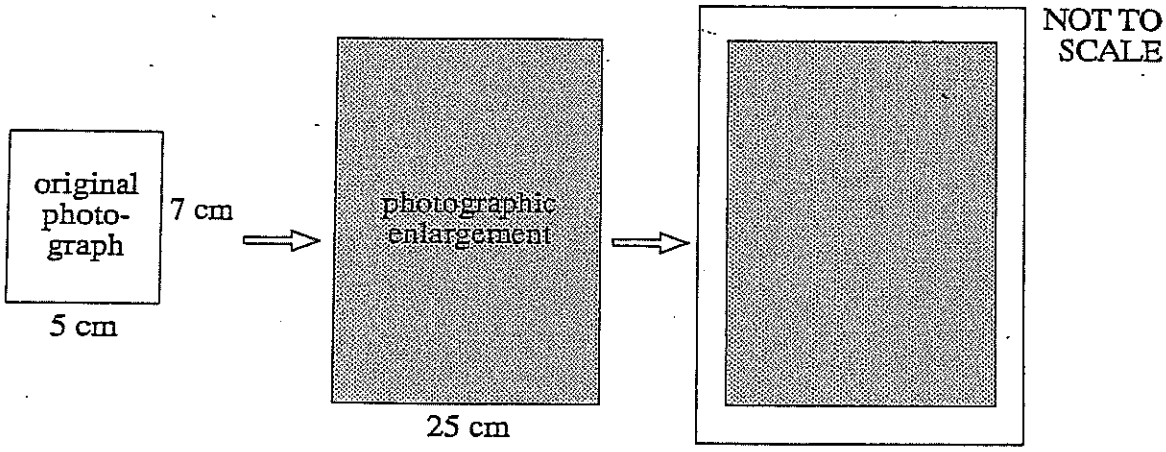
(B) median

(C) mode

(D) range

09

A photograph is enlarged and then mounted on cardboard so that there is a 5 cm border around the enlargement.



The dimensions of the cardboard are

(A) 30 cm × 40 cm (B) 30 cm × 54 cm

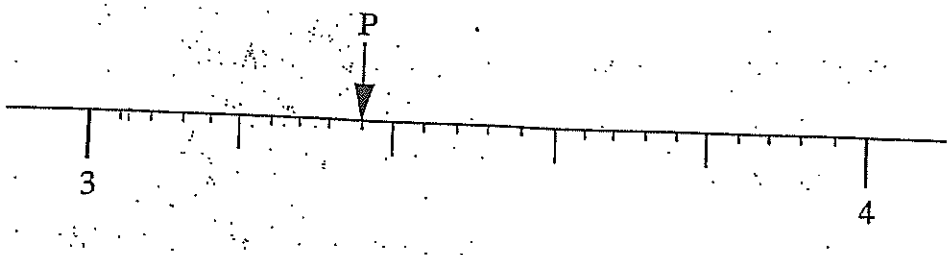
(C) 35 cm × 45 cm (D) 35 cm × 59 cm

10

Sam went to the shop to buy 50 g of curry powder. What should the scales show?

(A) 00·050 (B) 00·500 (C) 05·000 (D) 50·000

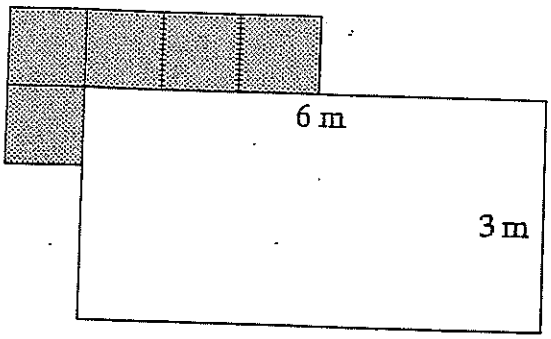
11.



Which decimal is represented at P?

(A) 3·14 (B) 3·24 (C) 3·28 (D) 3·36

12.



Concrete slabs are being laid round a rectangular garden.

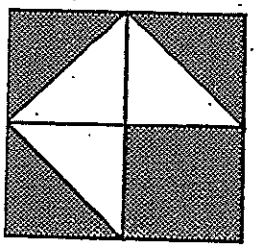
Each slab measures 1 m × 1 m.

How many MORE slabs are needed to surround the garden completely?

(A) 13 (B) 14

(C) 17 (D) 18

13



This bathroom tile is black and white.

What fraction of the area is ***white***?

(A) $\frac{3}{4}$ (B) $\frac{3}{5}$

(C) $\frac{3}{7}$ (D) $\frac{3}{8}$

14

Simplify $\left(\frac{t^6}{t^2}\right)^2$

(A) t^6 (B) t^8 (C) t^9 (D) t^{16}

15

A car travelled 78 kilometres between 1:00 p.m. and 2:30 p.m.

What was its average speed?

(A) 31 km/h (B) 52 km/h (C) 60 km/h (D) 117 km/h

016

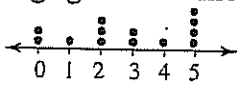
Hua is x years old. Tanya is 6 years older than Hua. Rosa is 3 years older than Tanya. The total of the ages of Hua, Tanya, and Rosa is 45 years. Which equation represents this information?

(A) $x + 9 = 45$ (B) $x + 15 = 45$

(C) $3x + 9 = 45$ (D) $3x + 15 = 45$

017

The dot plot below indicates the star ratings given to a movie by a group of reviewers.



The most frequent number of stars given was

A 2 B 3 C 4 D 5

018

0·032 kg =

(A) 0·32 g (B) 3·2 g (C) 32 g (D) 320 g

019

$4x^6 \div 8x^2 =$

(A) $\frac{x^3}{2}$ (B) $\frac{x^4}{2}$ (C) $2x^3$ (D) $2x^4$

020

Two intervals have lengths 2 mm and 1 m.

The ratio of the smaller interval to the larger interval is

(A) 1 : 2 (B) 1 : 50 (C) 1 : 500 (D) 1 : 2000

Q21

$2 \times 5 + 7 \times 10 =$

(A) 80 (B) 150 (C) 170 (D) 700

Q 22

Write 57 263 to the nearest hundred.

(A) 57 000 (B) 57 200 (C) 57 260 (D) 57 300

Q 23

$\frac{5}{100} + \frac{3}{10} =$

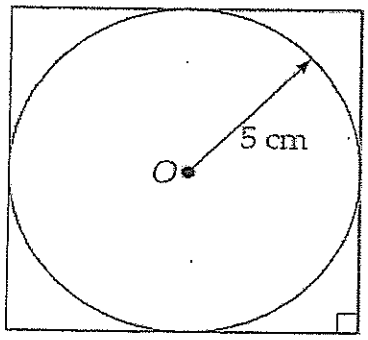
(A) 0.305 (B) 0.35 (C) 0.503 (D) 0.53

Q 24

102 multiplied by 395 is about

(A) 4000 (B) 40 000 (C) 400 000 (D) 4 000 000

Q25



A circle with radius 5 cm is drawn in a square as shown.

The area of the square is

(A) 20 cm^2

(B) 25 cm^2

(C) 40 cm^2

(D) 100 cm^2

Q 26

Which decimal is closest to 5.17?

(A) 5.16 (B) 5.175 (C) 5.18 (D) 5.2

Q 27

Tran caught 30 fish but 2 out of every 3 were too small to take home.

How many fish were too small to take home?

(A) 10 (B) 12 (C) 18 (D) 20

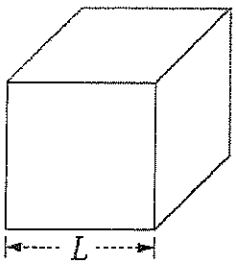
Q28

If $\Delta < -3$, then Δ can have the value

(A) 0 (B) $-\frac{1}{3}$ (C) -2 (D) -4

Q29

NOT TO SCALE



The volume of a cube is 64 cubic centimetres.

The side length (L) of the cube is

(A) 4 cm

(B) 8 cm

(C) 16 cm

(D) 32 cm

Q30

Which of the following scales would be the most appropriate to make a scale drawing of a police car on a piece of paper the same size as this page?

(A) 1 : 25 (B) 1 : 100 (C) 1 : 250 (D) 1 : 1000

Q31

Helena's home repayments increased from $962.22 to $984.24 per fortnight.

How much extra will Helena repay each year?

(A) $264.24 (B) $528.48 (C) $572.52 (D) $1145.04

Q32

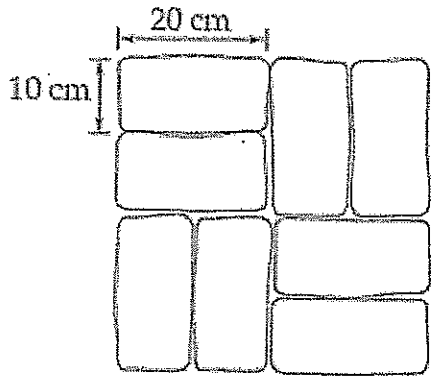
Michael won $240. He donated one third of his winnings to charity. He divided the remainder between his savings account and his investment account in the ratio 3 : 5.

How much did he deposit in his savings account?

(A) $30 (B) $60 (C) $90 (D) $100

Q 33

Alice is going to use this pattern to pave her courtyard.



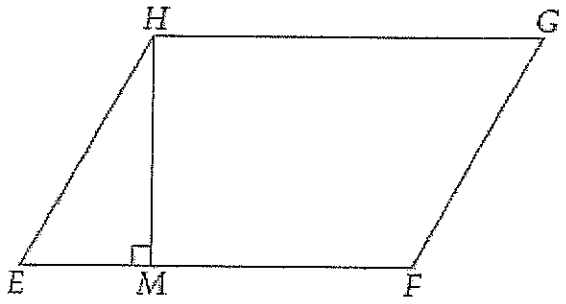
NOT TO SCALE

She is going to pave an area of 12 m^2. How many 20 cm × 10 cm pavers will she need?

(A) 75 (B) 150 (C) 240 (D) 600

Q 34

EFGH is a parallelogram. *MH* is perpendicular to *EF*.



Which of the following lengths are sufficient information to find the area of *EFGH*?

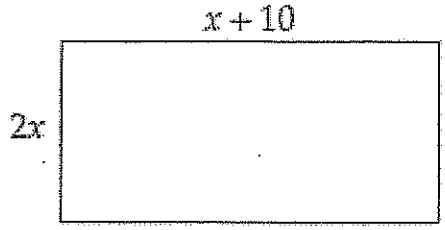
(A) The lengths of *HG* and *EH* only

(B) The lengths of *HG* and *MH* only

(C) The lengths of the diagonals *EG* and *HF* only

(D) The lengths of *EH* and *MH* only

Q35



What is the perimeter of this rectangle?

(A) $3x + 10$

(B) $4x + 20$

(C) $5x + 10$

(D) $6x + 20$

Q36

The balances show relationships between the masses of three types of object.

Which of the following shows the three objects arranged from heaviest to lightest?

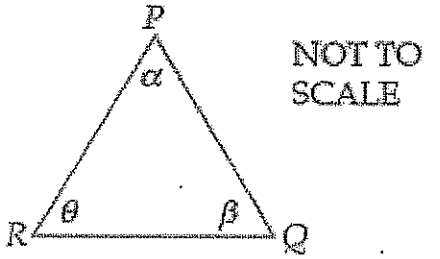
(A) △, ○, □

(B) ○, □, △

(C) □, △, ○

(D) △, □, ○

Q37



NOT TO SCALE

In ΔPQR, sides PQ and RQ are equal, and side PR is shorter than side PQ.

Which statement is true?

(A) $\alpha = \theta$

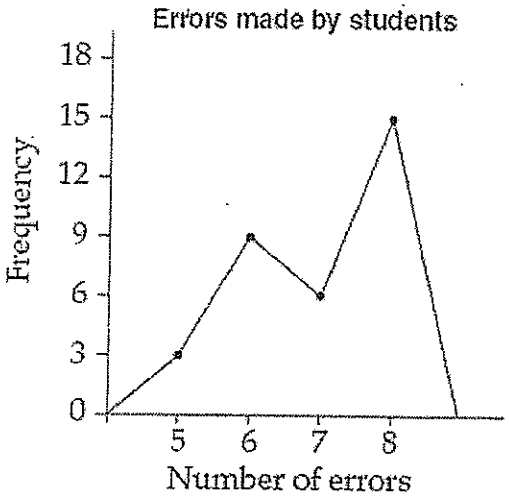
(B) $\alpha = \beta$

(C) $\theta = \beta$

(D) α, β and θ are all equal

038

The graph shows the number of errors made by a class of students in a Year 10 Mathematics test.



How many students are in the class?

(A) 4 (B) 15 (C) 23 (D) 33

039

The formula for the perimeter of a rectangle is

$$P = 2\ell + 2b.$$

What is the value of b when $\ell = 5$ and $P = 40$?

(A) 15 (B) 25 (C) 30 (D) 35

040

Which expression is NOT equal to $4m$?

(A) $m \times m \times m \times m$ (B) $6m - 2m$

(C) $\frac{8m}{2}$ (D) $m + m + m + m$

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

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

SYDNEY TECHNICAL HIGH SCHOOL

MATHEMATICS

Year 8 Term 3 2012

Common Test

TIME ALLOWED 45 mins

Section 1: Place a cross over your selected answer

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

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

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

SYDNEY TECHNICAL HIGH SCHOOL

MATHEMATICS

Year 8 Term 3 2012

Common Test

TIME ALLOWED 45 mins

Section 1: Place a cross over your selected answer

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

10

Given $v = u + at$ and $v = 15$, a correct set of values for u, a, t is

(A) $u = -5$, $a = 10$, $t = 2$

(B) $u = -5$, $a = 10$, $t = -2$

(C) $u = 5$, $a = -10$, $t = 2$

(D) $u = 5$, $a = -10$, $t = -2$

A

11

The ratio of girls to boys in a school is 5 : 6.
There are 90 girls at the school. How many boys are there?

108

12

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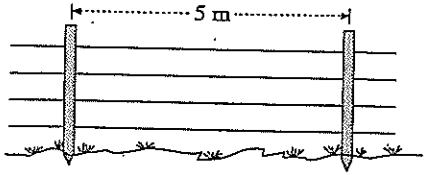


The materials needed to build this fence are

(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.

D

Q13 Two booksellers make the following offers to schools:

SUPERB SCHOOLBOOKS

20% DISCOUNT
off all books

TOP TEXTBOOKS

buy 5 books and
get an extra one
free!

Hammerhead High and Crimson College wish to buy copies of a Mathematics book. The book is listed at $15.50 by both booksellers before the deals.

(a) Hammerhead High buys 12 books from Superb Schoolbooks.
How much does the school pay?

$12 \times 15.50 = 186.00$ or 12.40×12

$- \ 37.20$

$\$ \ 148.80$ $\$ \ 148.80$

(b) Crimson College wants 6 books from Top Textbooks.
How much will the books cost?

$5 \times \$15.50 = \$77.50$

(c) Which bookseller gives better value for money? Give reasons for your answer.

SSB
1 book $ 12.40
12 book
$148.80

TT
1 book $ 12.92
∴ Superb best buy
12
$155

NON - CALCULATOR

4/5

1. A movie on television began at 8:30 p.m. and ended at 10:30 p.m. During this time the ratio *advertisements : movie* was 3 : 5.

What was the actual length of the movie in minutes?

75 mins

2.

NOT TO SCALE

The perimeter of the rectangle is 60 metres.

Find x.

$x = 23/2$

11.5

3. Solve $\frac{3x}{2} - 1 = 8$.

$x = 6$

4.

Score	*Frequency*
5	x
8	7

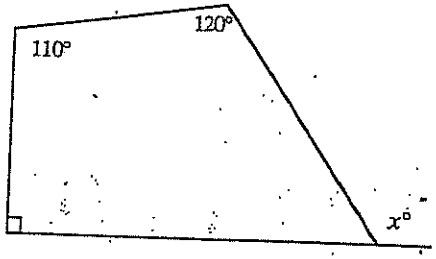
What value of x would give a mean of 6 for the scores in this frequency distribution table?

$x = 14$

5. Evaluate $3y^2 + 6y - 7$ when $y = -5$.

38

6. Find the value of x:

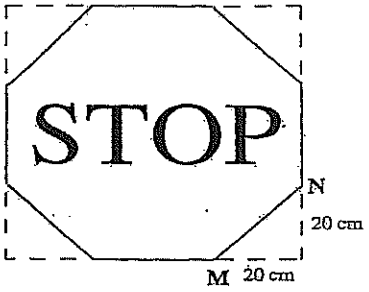


140°

7. Complete: $0{\cdot}36 = \frac{\square}{25}$

9

8.

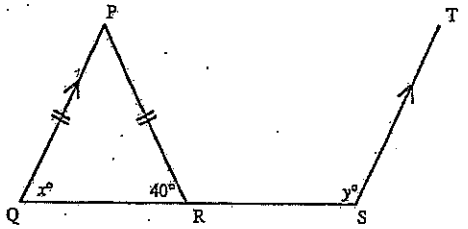


Use Pythagoras's Theorem to calculate the length of the side MN of the stop sign.
Give your answer in exact form.

$NM = \sqrt{800}$ ✓

$= 20\sqrt{2}$

9.



Complete the following statements :

(a) $x = 40$ (base angles of isosceles △PQR)
(reason)

(b) $y =$ 140° (co-interior angles PQ // TS)
(reason)

SECTION A
NON - CALCULATOR

/15

1. A movie on television began at 8:30 p.m. and ended at 10:30 p.m. During this time the ratio *advertisements* : *movie* was 3 : 5.

What was the actual length of the movie in minutes?

75 mins

2. $(x + 7)$ metres — NOT TO SCALE

x metres

The perimeter of the rectangle is 60 metres.

Find x.

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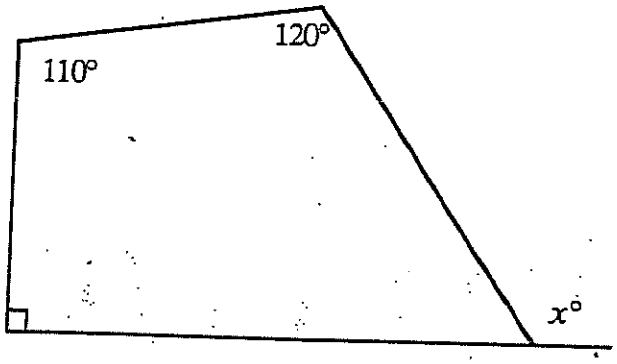

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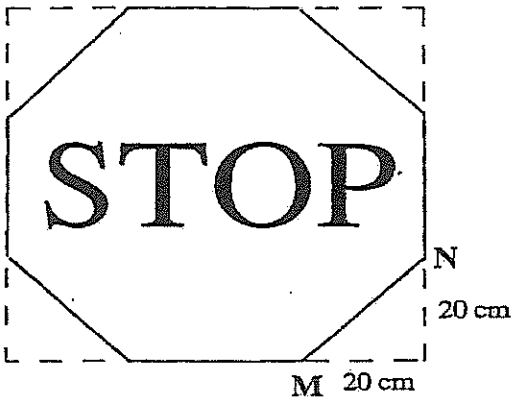

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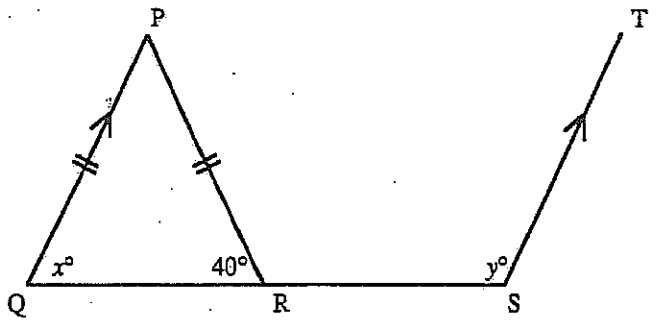

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10

Given $v = u + at$ and $v = 15$, a correct set of values for u, a, and t is

(A) $u = -5, \quad a = 10, \quad t = 2$

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(C) $u = 5, \quad a = -10, \quad t = 2$

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A

11

The ratio of girls to boys in a school is 5 : 6.

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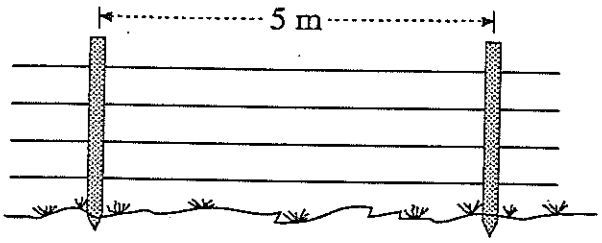

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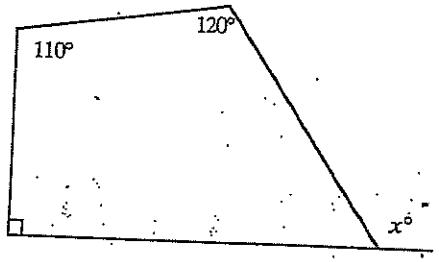

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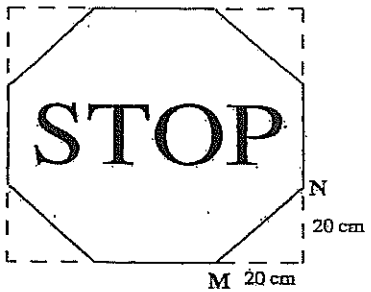

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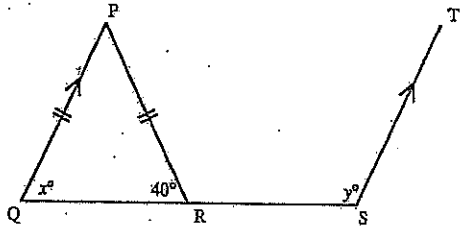

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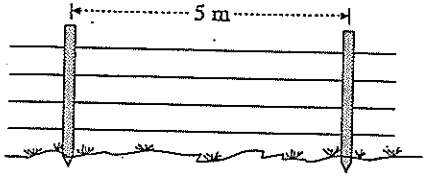

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