Name : _____

Teacher : _____

Sydney Technical High School

2009 August Common Test

General Instructions

- Working Time : 2 hours
- There will be a short break between Section 1 and Section 2
- Write using black or blue pen
- You may use pencil to draw or complete diagrams
- Attempt all questions
- Calculators may be used in Section 2 only

Section 1 (Non Calculator Section)

25 marks

Time allowed for this section is 30 minutes

Answer Questions 1 – 25 in the spaces provided

Calculators are **NOT** to be used in this section

There will be a short break between Section 1 and Section 2

Section 1 Non Calculator Section

25 marks

Answer Questions 1 to 25 in the spaces provided.

1. Find $12\frac{1}{2}\%$ of \$300.

2. What fraction is halfway between $\frac{1}{4}$ and $\frac{1}{10}$?

3. Evaluate $9^{\frac{3}{2}}$.

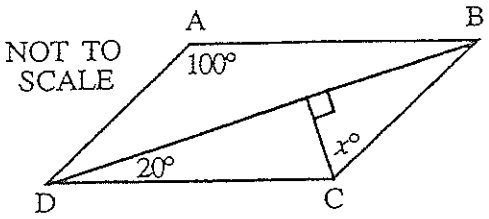
4. Evaluate $40 \div 0.02$.

5. Solve $\frac{3x-1}{4} = 5$

6. Find the sum of $250 - 249 + 248 - 247 + 246 - \cdots\cdots\cdots + 2 - 1$

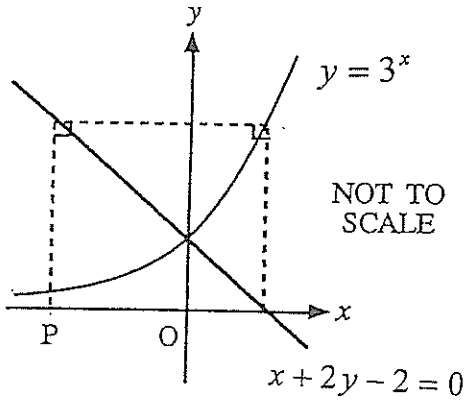
7. ABCD is a parallelogram.

What is the value of x ?



8. Evaluate $1 + \dfrac{1}{1 + \dfrac{1}{3}}$.

9. What are the co-ordinates of P ?



10. Suzie has an average mark of 48 from 6 tests. There are only two more tests, both out of 100. What is the highest average Suzie could have after all the tests are completed ?

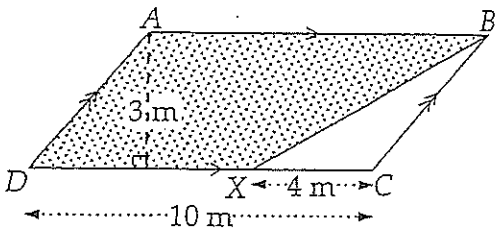
11. Insert grouping symbols to make true.

$$8 - 3 - 2 \times 5 = 15$$

12. Write another score to make the range equal to the mode.

16 19 19 24 26 30

13. Calculate the shaded area .



NOT TO SCALE

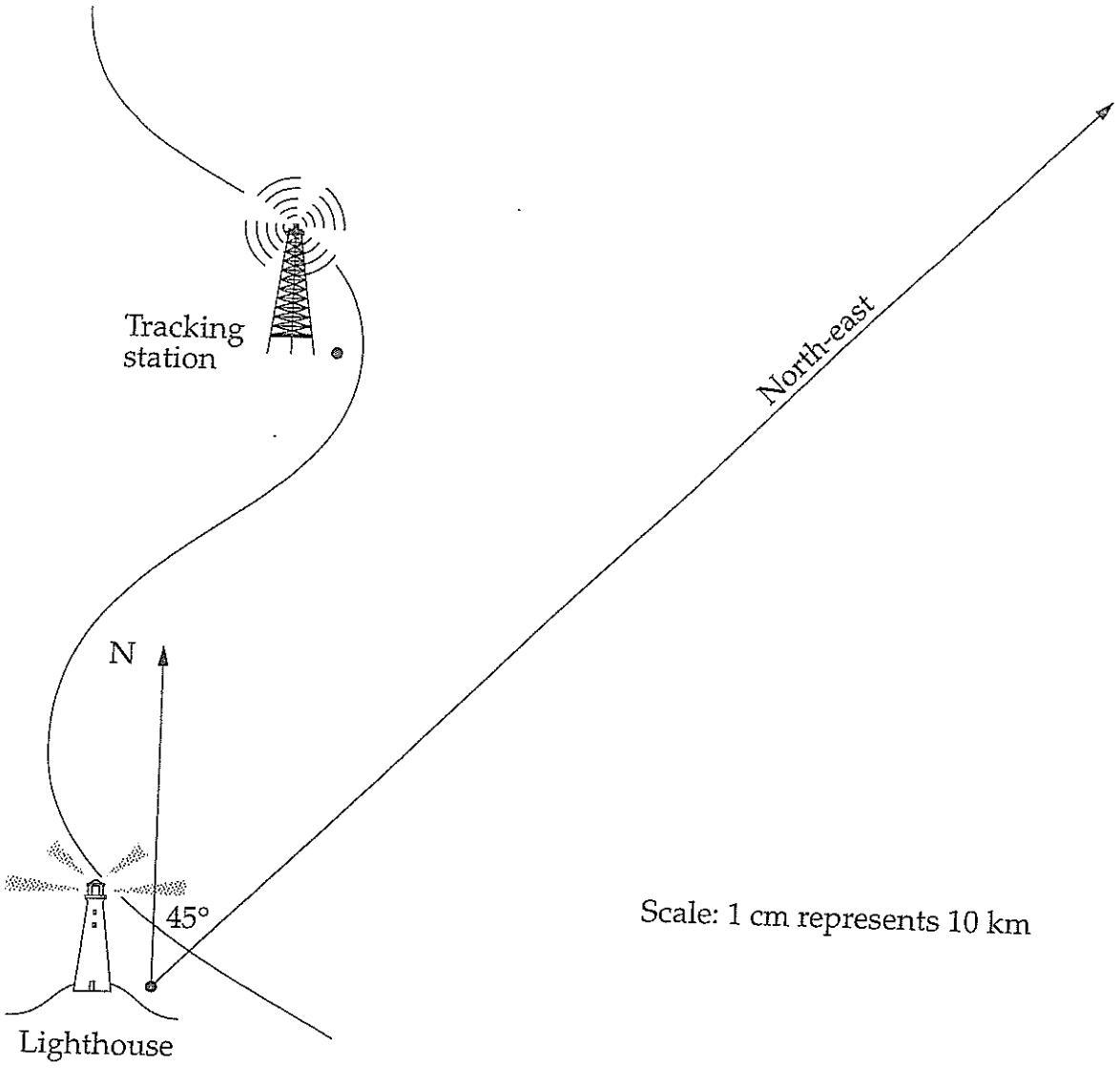
14. Find the co-ordinates of the vertex of the parabola $y = x^2 - 6x + 10$.

15. What is the equation of a circle with radius 4 units and centre at the origin ?

16. The point $(5 , a)$ lies on the line $2x - 3y - 1 = 0$. Find the value of a .

17. A distress signal has been detected from a ship. The ship is north-east of the lighthouse and it is 50 km from the tracking station.

The positions of the tracking station and the lighthouse are marked with dots.



Scale: 1 cm represents 10 km

Use your geometrical instruments to locate TWO possible positions of the ship. Label the positions *X* and *Y*.

18. Solve $4x^2 - 2x = 0$

---

19. The following stem-and-leaf plot represents the results of a class project.

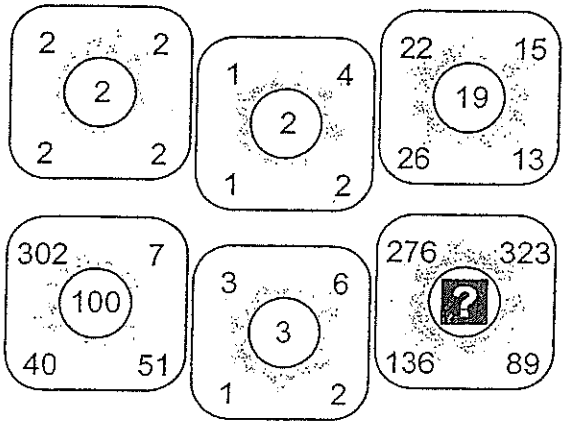
What is the difference between the median for the boys and girls ?

Boys		Girls
0 0	5	0
9 8 6 4	4	2 4
8 7 5	3	3 4 7
6	2	6 7
8	1	2 4
	0	7

---

20. The numbers in these squares follow a rule.

What is the missing number ?



---

21. Turf is sold in strips 50 cm by 3 m.

How many strips will Effie need to cover a rectangular area 12 m by 8 m?

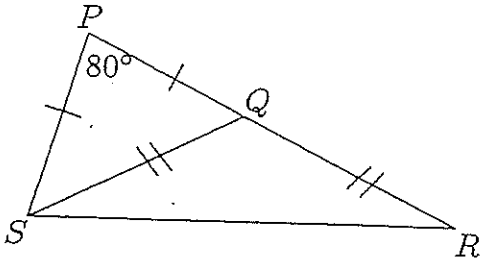
---

22. Place whole numbers less than 10 in the Δ and $\square$ to make the statement true.

$$\frac{\Delta}{3\times\square} > 2$$

23. In the diagram $PS = PQ$ and $QS = QR$.

If $\angle SPQ = 80°$ find the size of $\angle QRS$. (No reasons needed)



24. Consider the pattern below :

Row 1	1			
Row 2	2	6		
Row 3	6	24	120	
Row 4	24	120	720	5040

Find the last number in Row 5.

25. ABCD is a square. The vertex A lies on the y-axis and has a positive y-coordinate.

The vertex B lies on the x-axis and has a positive x-coordinate.

The coordinates of D are $(18, 21)$. Find the coordinates of C.

Name : SOLUTIONS

Teacher : _____

Sydney Technical High School

2009 August Common Test

General Instructions

- Working Time : 2 hours
- There will be a short break between Section 1 and Section 2
- Write using black or blue pen
- You may use pencil to draw or complete diagrams
- Attempt all questions
- Calculators may be used in Section 2 only

Section 1 (Non Calculator Section)

25 marks

Time allowed for this section is 30 minutes

Answer Questions 1 – 25 in the spaces provided

Calculators are **NOT** to be used in this section

There will be a short break between Section 1 and Section 2

Section 1 Non Calculator Section

25 marks

Answer Questions 1 to 25 in the spaces provided.

1. Find $12\frac{1}{2}\%$ of \$300.

\$37.50

2. What fraction is halfway between $\frac{1}{4}$ and $\frac{1}{10}$?

$\frac{7}{40}$

3. Evaluate $9^{\frac{3}{2}}$.

27

4. Evaluate $40 \div 0.02$.

2000

5. Solve $\frac{3x-1}{4} = 5$

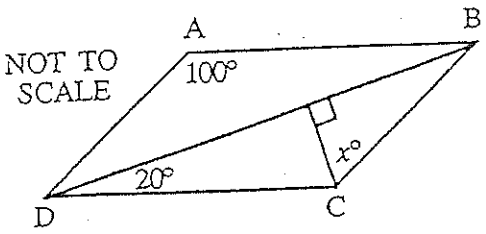
$x = 7$

6. Find the sum of $250 - 249 + 248 - 247 + 246 - \cdots\cdots\cdots + 2 - 1$

125

7. ABCD is a parallelogram.

What is the value of x ?

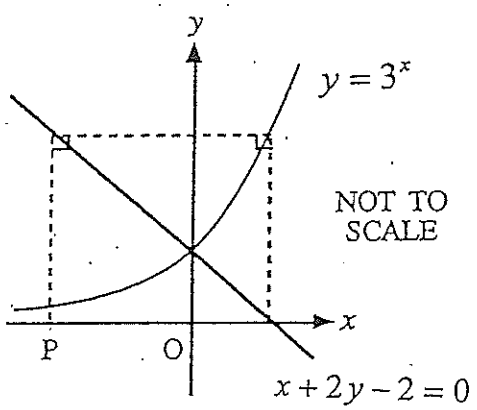


30

8. Evaluate $1 + \dfrac{1}{1 + \dfrac{1}{3}}$.

$1\frac{3}{4}$

9. What are the co-ordinates of P ?



P (−16, 0)

10. Suzie has an average mark of 48 from 6 tests. There are only two more tests, both out of 100. What is the highest average Suzie could have after all the tests are completed ?

61

11. Insert grouping symbols to make true.

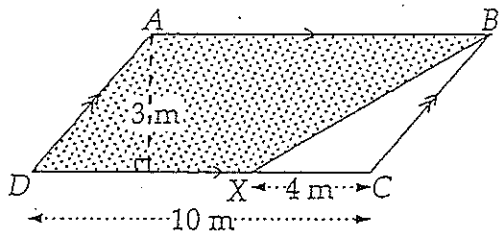
$(8 - 3 - 2) \times 5 = 15$

12. Write another score to make the range equal to the mode.

16 19 19 24 26 30

11 or 35

13. Calculate the shaded area .



NOT TO SCALE

24 m^2

14. Find the co-ordinates of the vertex of the parabola $y = x^2 - 6x + 10$.

(3, 1)

15. What is the equation of a circle with radius 4 units and centre at the origin ?

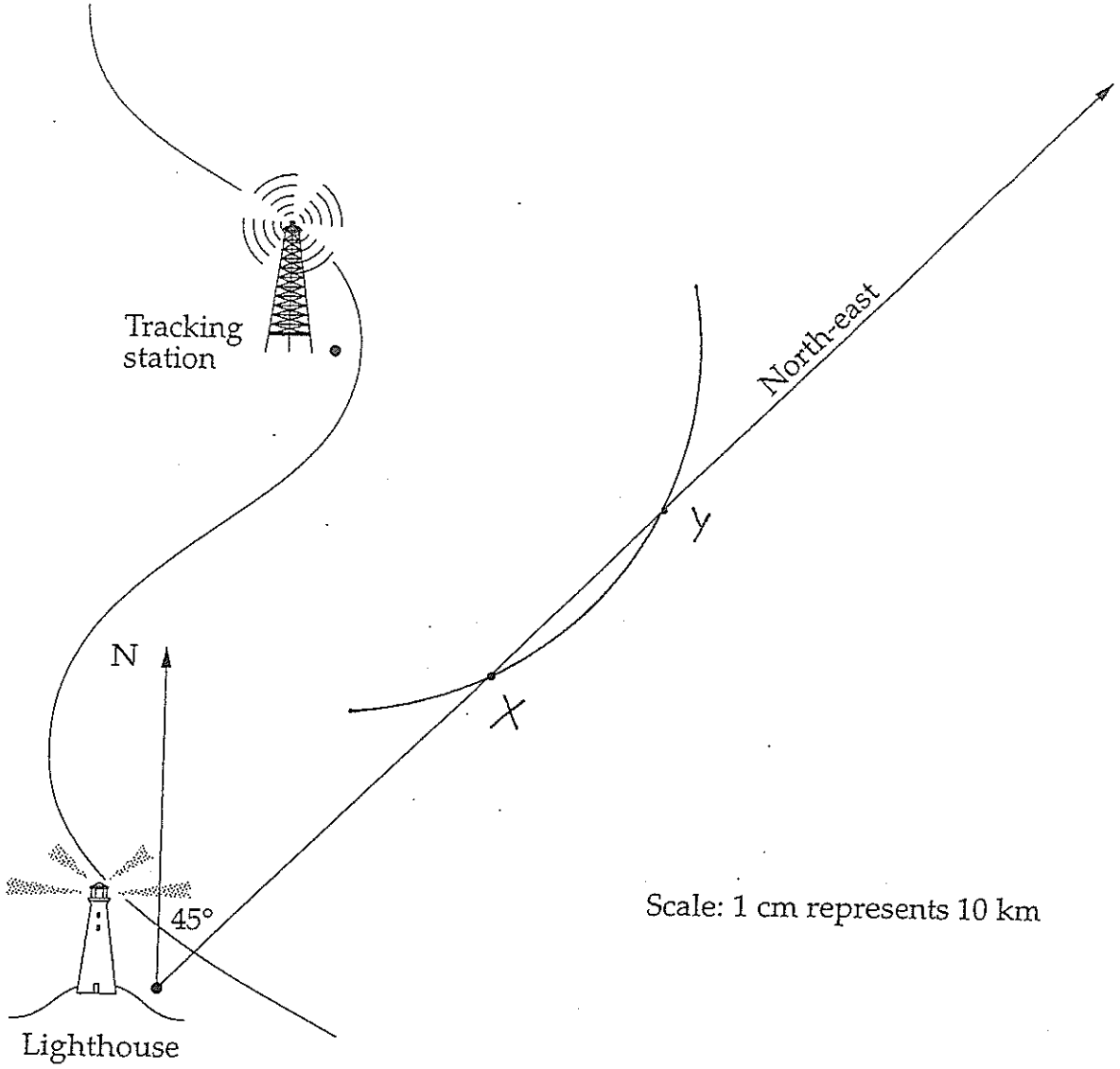
$x^2 + y^2 = 16$

16. The point (5 , a) lies on the line $2x - 3y - 1 = 0$. Find the value of a .

$a = 3$

17. A distress signal has been detected from a ship. The ship is north-east of the lighthouse and it is 50 km from the tracking station.

The positions of the tracking station and the lighthouse are marked with dots.



Scale: 1 cm represents 10 km

Use your geometrical instruments to locate TWO possible positions of the ship. Label the positions *X* and *Y*.

18. Solve $4x^2 - 2x = 0$

$x = 0, \frac{1}{2}$

19. The following stem-and-leaf plot represents the results of a class project.

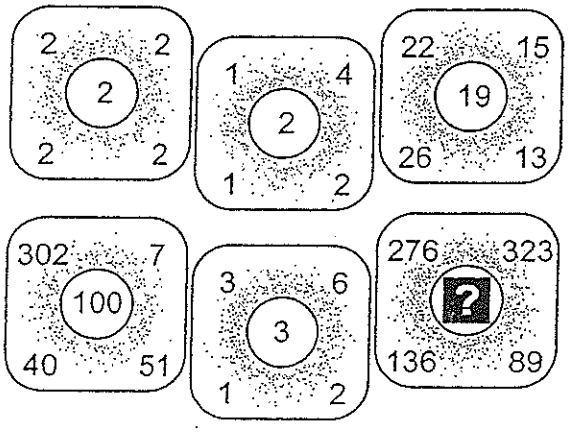
What is the difference between the median for the boys and girls ?

Boys		Girls
0 0	5	0
9 8 6 4	4	2 4
8 7 5	3	3 4 7
6	2	6 7
8	1	2 4
	0	7

12

20. The numbers in these squares follow a rule.

What is the missing number ?



206

21. Turf is sold in strips 50 cm by 3 m.

How many strips will Effie need to cover a rectangular area 12 m by 8 m?

64

22. Place whole numbers less than 10 in the Δ and $\square$ to make the statement true.

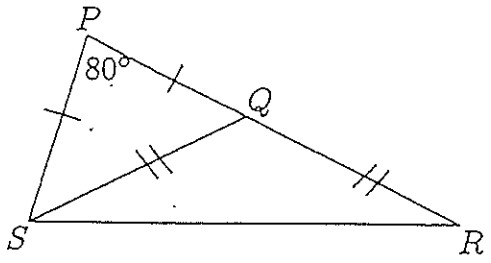
$$\frac{\Delta}{3\times\square} > 2$$

9, 8 or 7

1

23. In the diagram $PS = PQ$ and $QS = QR$.

If $\angle SPQ = 80°$ find the size of $\angle QRS$. (No reasons needed)



25°

24. Consider the pattern below :

Row 1	1			
Row 2	2	6		
Row 3	6	24	120	
Row 4	24	120	720	5040

Find the last number in Row 5.

362880

25. ABCD is a square. The vertex A lies on the y-axis and has a positive y-coordinate.

The vertex B lies on the x-axis and has a positive x-coordinate.

The coordinates of D are $(18,21)$. Find the coordinates of C.

(21, 3)