PRELIMINARY EXAMINATION 1 2016

MATHEMATICS

PRIMARY 6

PAPER 1

(BOOKLET A)

Date: 11 May 2016

Total Time for Booklets A and B: 50 min

The use of calculators is **NOT** allowed.

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Questions **1** to **10** carry 1 mark each. Questions **11** to **15** carry 2 marks each. For each question, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the oval (1, 2, 3 or 4) on the Optical Answer Sheet. All diagrams are not drawn to scale. (20 marks)

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1. Which one of the following digits in 9.215 is in the tenths place?

   (1) 1
   (2) 2
   (3) 5
   (4) 9

---

2. 47 405 pupils attended the National Day Parade.
   Express this number to the nearest thousand.

   (1) 47 000
   (2) 47 400
   (3) 47 410
   (4) 47 500

---

3. Which one of the following is likely to be the mass of a can of soft drink?

   (1) 3 g
   (2) 30 g
   (3) 300 g
   (4) 3000 g



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4. Which one of the following numbers is the largest?

(1) 0.8

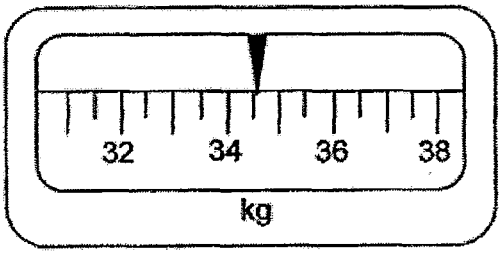
(2) 0.72

(3) 0.098

(4) 0.605

---

5. Which one of the following is closest to the reading shown on the weighing scale below?



(1) 34.1 kg

(2) 34.6 kg

(3) 35.1 kg

(4) 35.6 kg

---

6. What is the value of $6 - 1 + 5 - 4 \times (12 + 4 - 3)$?

(1) 5

(2) 6

(3) 10

(4) 17

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7. Jay cuts three figures shown below along the dotted lines. Figure 1 is a parallelogram, Figure 2 is a rhombus and Figure 3 is a square.

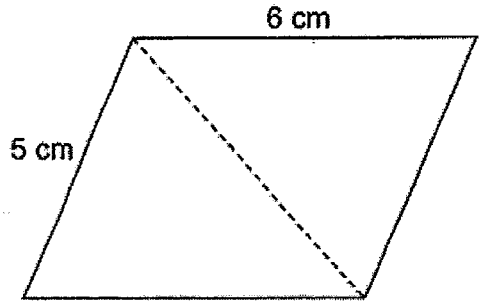


Figure 1

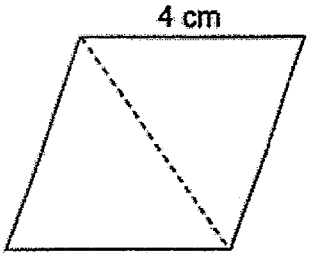


Figure 2

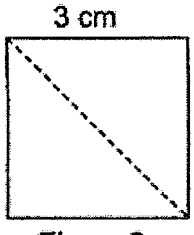


Figure 3

Which of the figures above consist(s) of at least one isosceles triangle after cutting?

(1) Figure 1, 2 and 3

(2) Figure 1 and 2 only

(3) Figure 1 and 3 only

(4) Figure 2 and 3 only

---

8. The amount of time taken by 4 pupils to complete their homework is given in the table below.

Name	Time taken
Azel	1.5 h
Clayton	$1\frac{3}{5}$ h
Isaac	1 h 45 min
Matthias	95 min

Who took the longest time to complete his homework?

(1) Azel

(2) Clayton

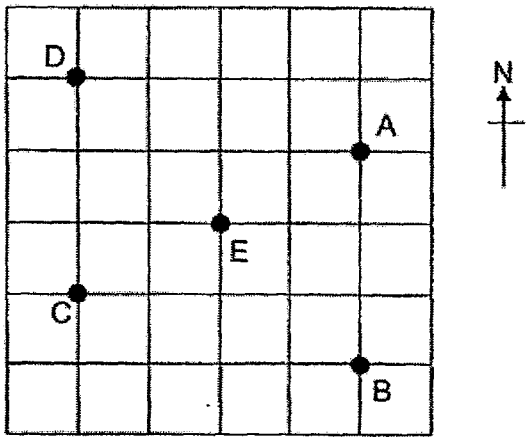
(3) Isaac

(4) Matthias

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9. In the square grid below, A, B, C, D and E are five points on the ground.



Which one of the following statements is correct?

(1) B is north-west of E

(2) C is south-west of E

(3) E is north-east of A

(4) E is south-east of D

---

10. A pail was half-filled with water. 4 cups of water were added to completely fill the pail. What was the ratio of the volume of a cup of water to the volume of the pail?

(1) 1 : 8

(2) 8 : 1

(3) 1 : 4

(4) 4 : 1

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11. Both Mr Lim and Mr Tan stay in the same block of flats. Mr Lim's flat is on the 21st storey. Mr Tan's flat is on the middle storey of the building which is lower than Mr Lim's. There are 8 storeys between their flats. The 1st storey of the block is a void deck. What is the highest storey in the block?

(1) 23rd storey

(2) 24th storey

(3) 25th storey

(4) 29th storey

---

12. 10 boys had to fold some paper hearts. 2 of them fell ill and the rest of the boys had to fold 4 more paper hearts each. How many paper hearts did they have to fold altogether?

(1) 128

(2) 160

(3) 200

(4) 320

---

13. Malcolm had some milk chocolates and dark chocolates. He ate an equal amount of milk and dark chocolates. He had $\frac{5}{7}$ of the milk chocolates and $\frac{2}{5}$ of the dark chocolates left. What fraction of the chocolates did Malcolm eat?

(1) $\frac{5}{12}$

(2) $\frac{12}{31}$

(3) $\frac{31}{35}$

(4) $\frac{31}{70}$

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14. 8 lamp posts were put up along a road at an equal distance. The distance between the first and the fifth lamp post was 40 m. What was the distance between the first and the eighth lamp post?

(1) 60 m

(2) 64 m

(3) 70 m

(4) 80 m

---

15. Jared bought some sweets to give to his friends. His sister ate 11 of them. His mother gave him the same number of sweets that he had left. He packed the sweets into 8 gift bags. Each bag contained 13 sweets. How many sweets did Jared buy?

(1) 52

(2) 63

(3) 104

(4) 115

END OF BOOKLET A

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PRELIMINARY EXAMINATION 1 2016

MATHEMATICS

PRIMARY 6

PAPER 1

(BOOKLET B)

Date: 11 May 2016

Total Time for Booklets A and B: 50 min

The use of calculators is **NOT** allowed.

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Questions **16** to **25** carry 1 mark each. Write your answers in the spaces provided. For questions which require units, give your answers in the units stated. (10 marks)

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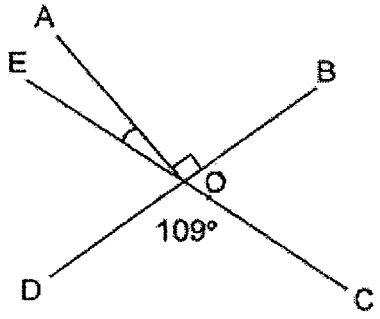
16. Find the value of 96.4 ÷ 40.

Ans: _____

17. What is the value of $\frac{4n}{3} - n$ when $n = 6$?

Ans: _____

18. BD and EC are straight lines. Find ∠AOE.



Ans: _____ °

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19. Jon received 8 coins with a total value of $2. The coins were a mixture of $1, 20¢ and 10¢ coins. How many 20¢ coins did he receive?

Do not write in this space.

Ans:_____

20. Mrs Lee deposits $2800 in a bank for 1 year. The bank offers an annual interest rate of 1%. What is the total amount of money she will have in the bank at the end of 1 year?

Ans: $_____

21. $\frac{2}{3}$ of a bag of marbles was given to some children.
Each child received $\frac{1}{9}$ of the marbles in the bag.
How many children were there?

Ans:_____

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22. Michael has twice as much money as Lionel. Lionel has $\frac{3}{5}$ as much money as Fred. Find the ratio of Michael's money to the ratio of Fred's money.

Do not write in this space.

Ans:_____

23. The display board at a car park showing the parking charges is shown below. However, the charges after 5 p.m. could not be read as the paint had peeled off.

Time	Parking charges
8 a.m. to 5 p.m.	$1.00 per hour or part thereof
After 5 p.m.	$[illegible] per $\frac{1}{2}$ hour or part thereof

Susie parked her car from 3 p.m. to 5.45 p.m. on the same day. She paid a total sum of $4.80. How much was the parking charges per $\frac{1}{2}$ hour or part thereof after 5 p.m.?

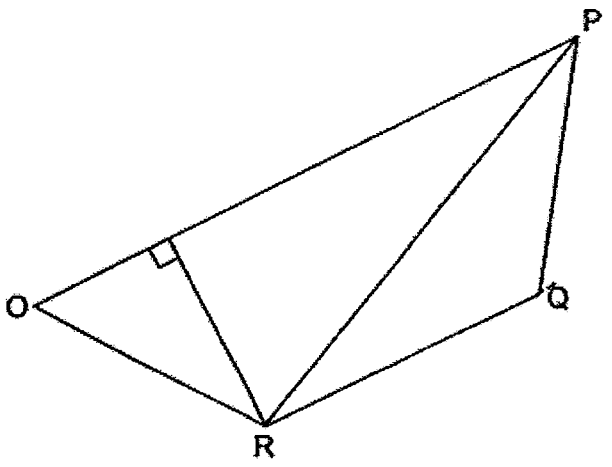
Ans: $_____

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Do not write in this space.

Use the figure below to answer questions 24 and 25.



24. Measure and write down the size of ∠RQP.

Ans: _____°

25. OP is parallel to RQ.
Measure the height of triangle PQR given its base is RQ.

Ans: _____cm

Total marks for questions 16 to 25

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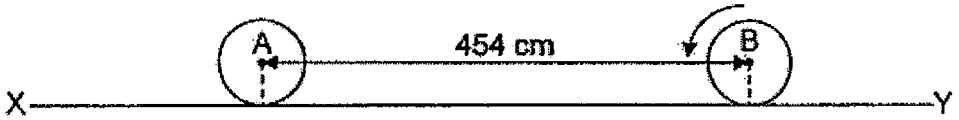
Questions 26 to 30 carry 2 marks each. Show your working and write your answers in the spaces provided. For questions which require units, give your answers in the units stated. (10 marks)

Do not write in this space.

26. Write three hundred and two thousand and forty-one in figures.

Ans: _____

27. The figure below shows 2 wheels with centres A and B. A and B are 454 cm apart from each other at first. Both wheels have a radius of 7 cm each. The wheel with centre B starts to turn along the straight line XY towards the wheel with centre A which does not move.



How many complete revolutions must the wheel with centre B make before it touches the other wheel with centre A? Take $\pi = \frac{22}{7}$.

Ans: _____

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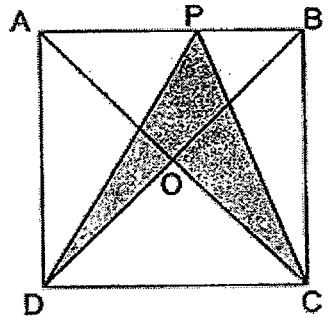
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28. Samuel had a total of 30 nuggets and fish balls at first. He exchanged all his nuggets for fish balls. He had 48 fish balls after exchanging every 1 nugget for 2 fish balls. How many fish balls did he have at first?

Do not write in this space.

Ans: _____

29. ABCD is a square. PCD and OCD are triangles. What fraction of the square ABCD is shaded?



Ans: _____

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Do not write in this space.

30. Joel used black and white square tiles to form figures that follow a pattern. The first 4 figures are shown below.

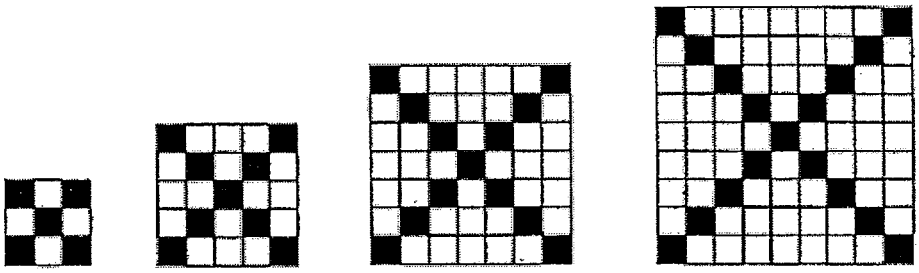


Figure 1 Figure 2 Figure 3 Figure 4

In figure 8, he used 33 black tiles. How many white tiles did he use to form figure 8?

Ans:_____

Total marks for questions 26 to 30

END OF BOOKLET B
END OF PAPER 1

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PRELIMINARY EXAMINATION 1 2016

MATHEMATICS

PRIMARY 6

PAPER 2

Date: 11 May 2016

Total Time: 1 h 40 min

The use of an approved calculator is expected, where appropriate.

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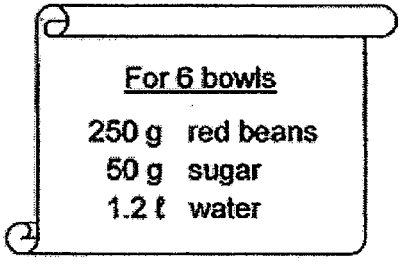
Questions 1 to 5 carry 2 marks each. Show your working clearly and write your answers in the spaces provided. For questions which require units, give your answers in the units stated. All diagrams are not drawn to scale. (10 marks)

Do not write in this space.

1. Helen spent \$3 more than Mary during recess. They spent \$$k$ in total. How much did Helen spend? Give your answer in terms of k.

Ans: \$_____

2. Mrs Lim made red bean soup using the recipe below.



She had 750 g of red beans, 210 g of sugar and 4 ℓ of water. How many bowls of red bean soup could she make at most?

Ans: _____

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3. Alan arranged to meet a friend one afternoon. He arrived 15 minutes earlier than the meeting time. His watch showed 12.54 p.m.. His watch was 9 minutes faster than the actual time. What was the actual meeting time?

Do not write in this space.

Ans: _____ p.m.

4. 1 pen and 2 correction tapes cost $9.10.
2 pens and 1 correction tape cost $8.00.
How much is the cost of 1 pen?

Ans: $_____

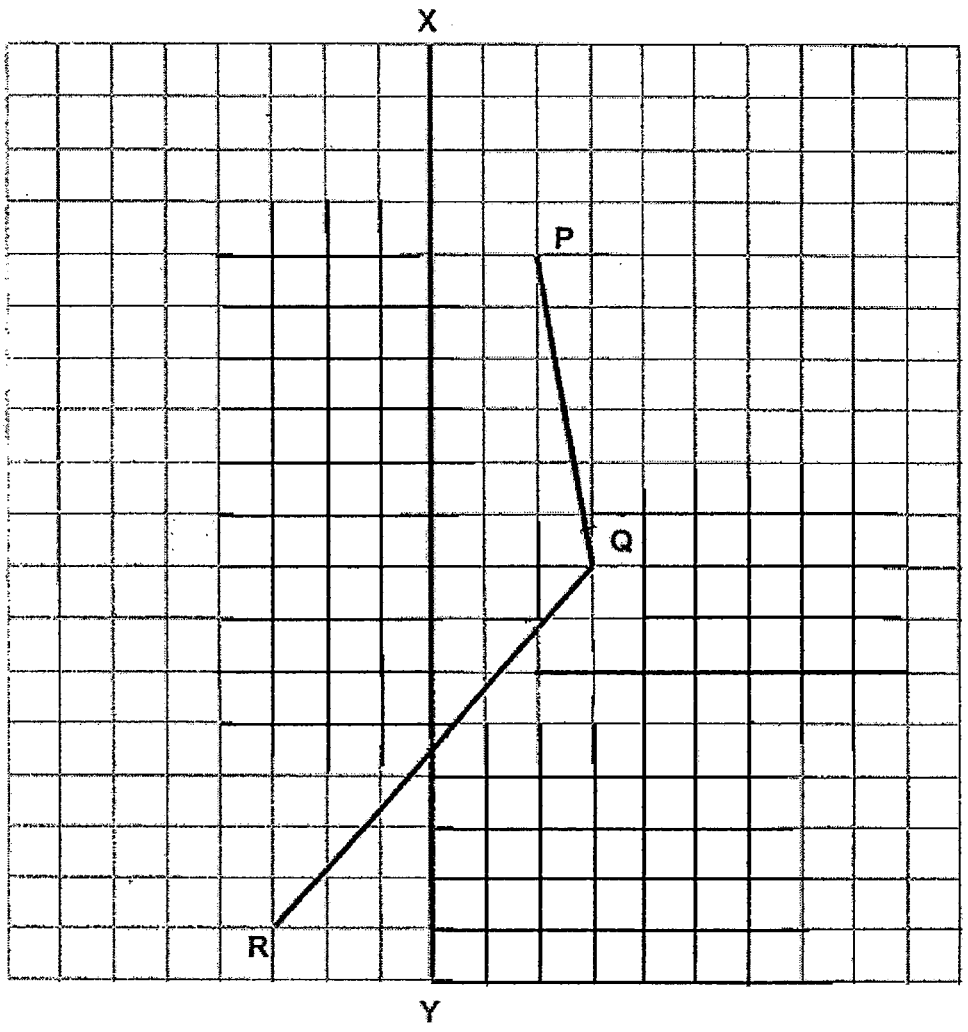
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5. In the square grid below,

(a) draw two straight lines to form a symmetric figure with XY as the line of symmetry

(b) draw a line QS where QS is perpendicular to PQ, QS = QP and QS does not cross the line XY.

Do not write in this space.



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For questions 6 to 18, show your working and write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part-question.
All diagrams are not drawn to scale. (50 marks)

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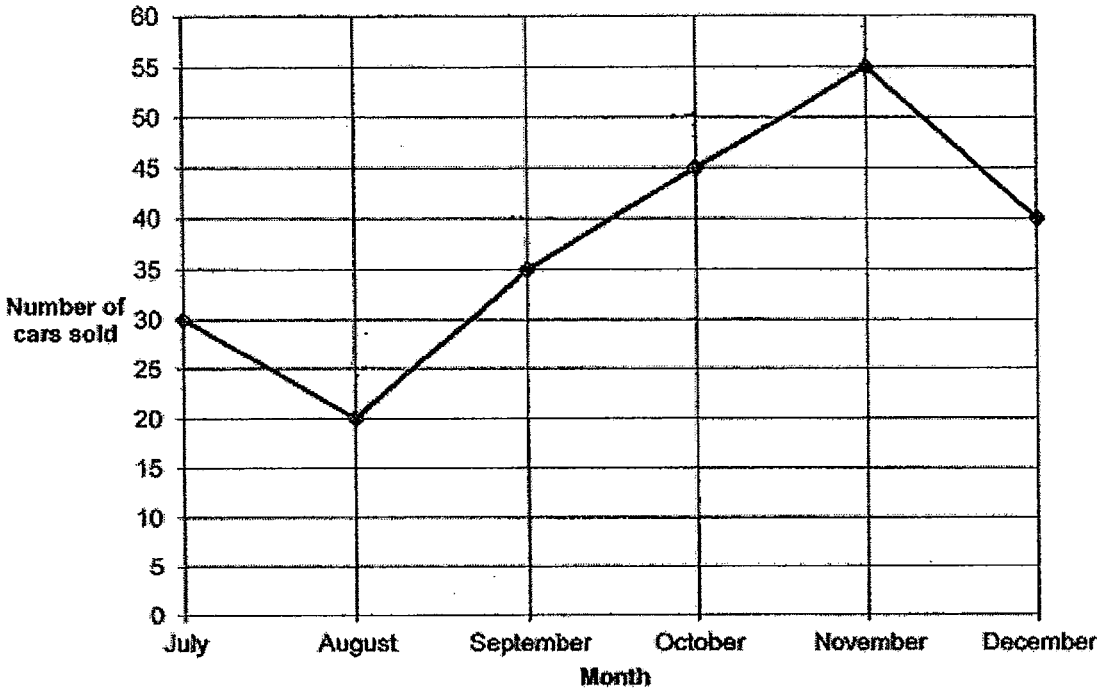
6. A group of pupils had an average mass of 40 kg. 2 pupils with an average mass of 45 kg joined the group. The average mass of the group of pupils became 42 kg. How many pupils were there in the group at first?

Ans: _____ [3]

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7. The line graph below shows the number of cars sold from July to December.

Do not write in this space.



(a) What percentage of the total number of cars sold from July to December was sold in the month of October?

(b) What was the percentage decrease in the number of cars sold from the month of November to December?
Give your answer correct to 1 decimal place.

Ans: (a) _____[1]

(b) _____[2]

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8. Abel and Benjamin spent \$802 altogether. $\frac{1}{4}$ of Abel's spending was \$41 more than $\frac{1}{7}$ of Benjamin's spending. How much more did Benjamin spend than Abel?

Do not write in this space.

Ans: _____ [3]

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9.

<u>Special Offer!</u>
Cupcake at $1.70 each

Buy 2 cupcakes and get the 3rd one at half price.

Xavier has $29. What is the greatest number of cupcakes he can buy?

Do not write in this space.

Ans: _____ [3]

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10. Caylen used some string to tie 24 small parcels. He used the same amount of string to tie 16 large parcels. Each large parcel used 70 cm more string than a small parcel. How many metres of string did Caylen use altogether?

Do not write in this space.

Ans: _____ [3]

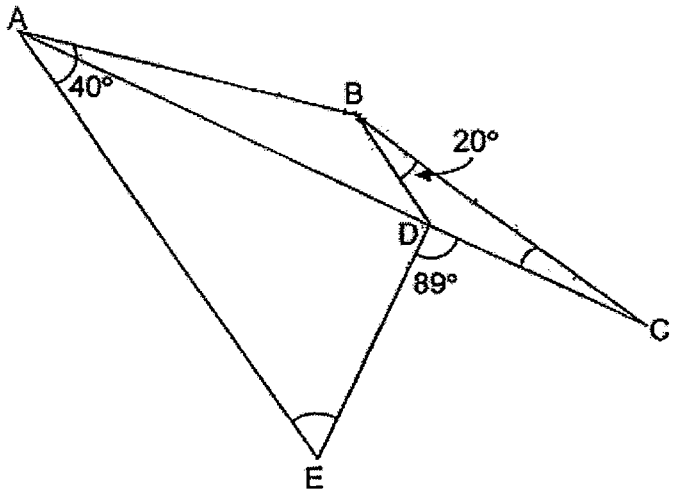
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11. In the figure, ABDE is a trapezium and ABC is an isosceles triangle. $\angle BAE = 40°$, $\angle CBD = 20°$ and $\angle CDE = 89°$.

Do not write in this space.

(a) Find $\angle BCA$.

(b) Find $\angle AED$.



Ans: (a)_____ [2]

(b)_____ [2]

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12. The ratio of Alvin's savings to Bernard's savings was 3 : 11 after Alvin gave $\frac{1}{10}$ of his savings to Bernard. Both later spent the same amount of money at a book fair. In the end, the ratio of Alvin's savings to Bernard's savings became 1 : 9 and Bernard had $264 more than Alvin.

Do not write in this space.

(a) What was the ratio of Alvin's savings to Bernard's savings at first?

(b) How much savings did Alvin had at first?

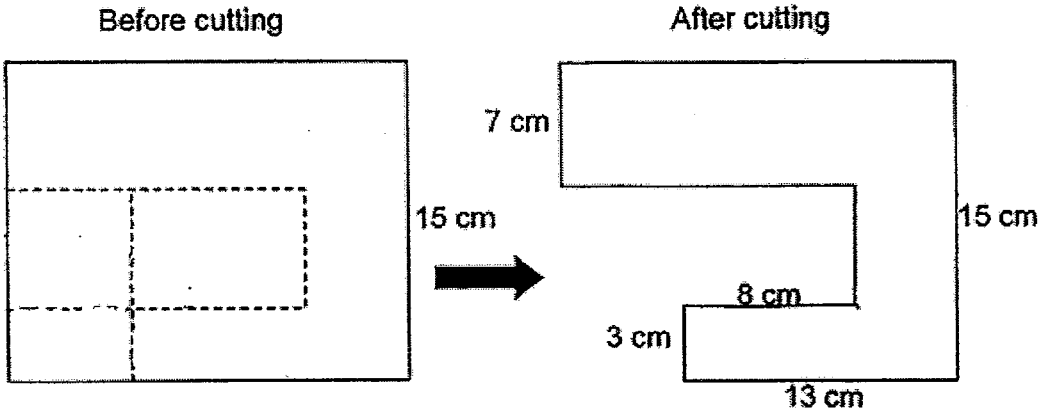
Ans: (a) _____ [1]

(b) _____ [3]

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13. 2 small rectangles are cut out from a rectangular piece of paper along the dotted lines as shown below. The breadth of the paper is 15 cm. The perimeter of the paper after cutting is 82 cm.

Do not write in this space.



(a) What is the length of the rectangular paper before the cutting?

(b) What is the area of the remaining paper after the cutting?

Ans: (a) _____ [2]

(b) _____ [2]

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14. Ray packs some egg tarts into 6 small boxes and 8 large boxes.
A large box can hold 5 more egg tarts than a small box.
$\frac{1}{4}$ of the tarts is packed into small boxes.

(a) How many more small boxes would Ray use if he decides to pack the egg tarts in all the large boxes into small boxes?

(b) How many egg tarts are there in each large box?

Do not write in this space.

Ans: (a) _____ [1]

(b) _____ [3]

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15. Mr Fong and his 7 family members ate at a restaurant and paid $256.80. He had been given a 20% discount on the usual price. The payment included a 7% GST on the discounted price.
What was the usual price of the dinner per person, without GST?

Do not write in this space.

Ans: _____ [4]

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16. Ryan draws a border along the four sides of a drawing paper. He decorates it with 8 identical shaded quarter circles and 6 identical shaded semicircles as shown below. The perimeter of the drawing paper is 84 cm.

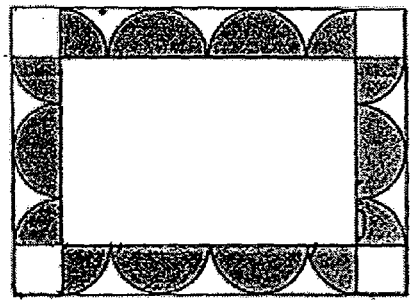
Do not write in this space.

(a) What is the width of the border?

(b) Find the area of the shaded part of the border.

(c) Find the perimeter of the shaded part of the border?

Take $\pi = 3.14$



Ans: (a) _____ [1]

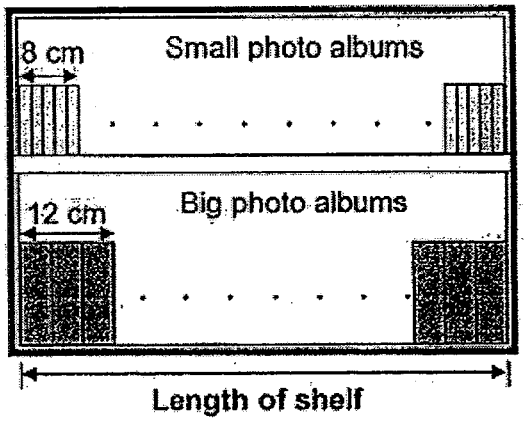
(b) _____ [2]

(c) _____ [2]

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17. In a bookshop, small photo albums and big photo albums were wrapped in bundles of 5 albums and 3 albums respectively. Each bundle of small photo albums had a width of 8 cm and each bundle of big photo albums had a width of 12 cm. The photo albums were arranged from one end to the other end of a shelf with no gap as shown below.

Do not write in this space.



(a) What could be the shortest possible length of the shelf?

(b) What fraction of the total number of photo albums was small photo albums? Give your answer in the simplest form.

(c) There were 54 more small photo albums than big photo albums on the shelf. How many photo albums were there altogether?

Ans: (a) _____ [1]

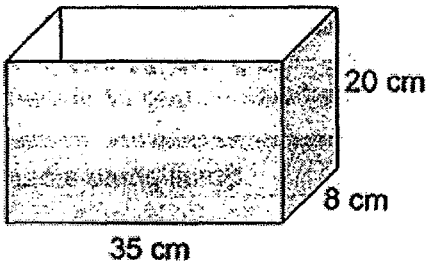
(b) _____ [1]

(c) _____ [3]

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18. Stephen has an open rectangular box as shown below.

Do not write in this space.



He has 980 1-cm cubes to pack into the box. He arranges the cubes to cover the base of the box completely before building another layer on top of it and continues until all the cubes are used up.

(a) How many **complete** layers of the base does he have in the end?

Ans: _____ [1]

(b) What fraction of the box is packed with 1-cm cubes?

Ans: _____ [1]

(c) Stephen decides to re-arrange the cubes to touch only the inside of the box. How many more cubes does he need to completely touch the inside of the box?

Ans: _____ [3]

END OF PAPER.
PLEASE CHECK YOUR WORK CAREFULLY.

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ANSWER SHEET

EXAM PAPER 2016

SCHOOL : CATHOLIC HIGH

SUBJECT : MATHEMATICS

TERM : PERIOD 1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	1	3	1	2	3	4	3	4	1
Q11	Q12	Q13	Q14	Q15					
1	2	2	3	2					

16) $96.4 \div 40 = 2.41$

17) $\frac{4n}{3} - n$

$= \frac{4(6)}{3} - 6$

$= \frac{24}{3} - 6$

$= 2$

18) $\angle AOE$

$= 109° - 90°$

$= 19°$

19) $2.00 - $1.00 = $1.00 (1 x $1.00 coin)

$1.00 - $0.20 - $0.20 - $0.20 = $0.40 (3 x $0.20 coins)

$0.40 ÷ $0.10 = 4 (4 x $0.10 coins)

20) $\frac{101}{100} x \$2800 = \$2820$

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21) $\frac{2}{3} \div \frac{1}{9}$
$= \frac{2}{3} x \frac{9}{1}$
$= \frac{18}{3}$
$= 6$

22) Michael: 2 x Lionel
Lionel: $\frac{3}{5}$ x Fred
Fred: 1

Hence,
Michael: 1.2
Lionel: 0.6
Fred: 1

Ratio of Michael's money to Fred's = 6:5

23) 3p.m. to 5p.m. = 2hours (2 x \$1.00 = \$2.00)
\$4.80 - \$2.00 = \$2.80
5.45p.m. – 5p.m. = 45mins (consist of 2 x $\frac{1}{2}$ hours)
Hence, the parking charges per $\frac{1}{2}$hour or part thereof after 5p.m.
= \$2.80 ÷ 2 = \$1.40

24) ∠RQP = 125°

25) Height of triangle PQR = 3cm

26) 302,041

27) $\frac{22}{7}$ x 2(7)
$= \frac{22}{7}$ x 14
= 44

(454cm – 7cm – 7cm) ÷ 44 = 10
Hence, the wheel must complete 10 revolutions.

28) 48 – 30 = 18
30 – 18 = 12
He had 12 fish balls at first.

29) Triangle PDC is half of ABCD (P, at any point of AB marks the height of Triangle PDC)
Triangle ODC is $\frac{1}{4}$ of ABCD, hence $\frac{1}{2} - \frac{1}{4} = \frac{1}{4}$ is shaded.

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30) Figure 1: 3 x 3 $((3-1) \times 2) + 1) = 5$
Figure 2: 5 x 5 $((5-1) \times 2) + 1) = 9$
Figure 3: 7 x 7 $((7-1) \times 2) + 1) = 13$
Figure 4: 9 x 9 $((9-1) \times 2) + 1) = 17$
...
Figure 8: 17 x 17
= 289

289 – 33 = 256
He used 256 white tiles to from figure 8.

1) Helen spend = $\$\frac{k-3}{2} + 3$

2) 750g ÷ 250g = 3
3 x 6 bowls = 18 bowls

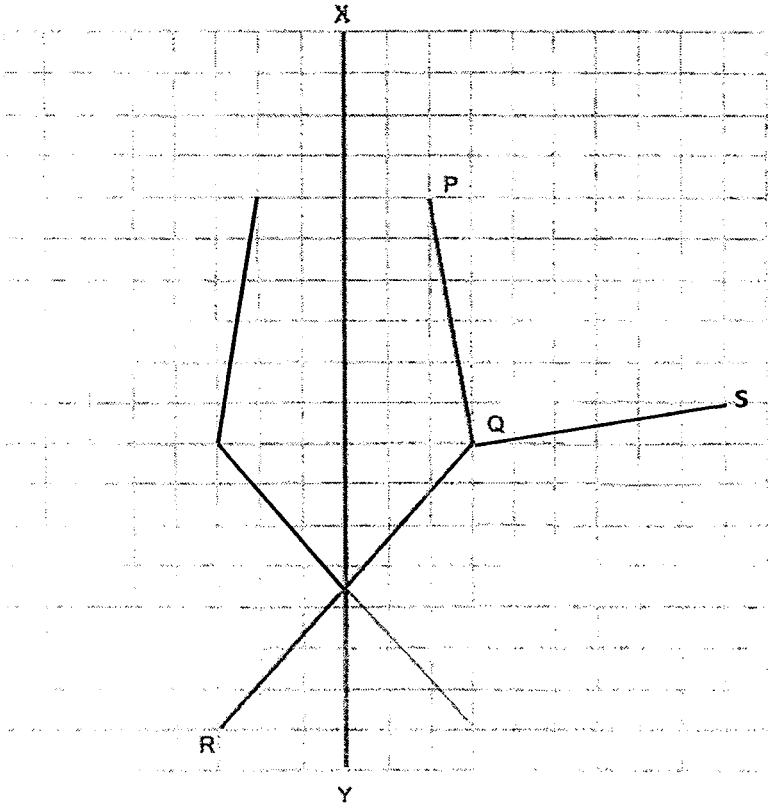
3) 12.54p.m. – 9mins + 15mins = 01:00p.m.

4) 1 pen 2 correction tapes = $9.10
2 pens 1 correction tape = $8.00
2 pens 4 correction tapes = $9.10 x 2 = $18.20

3 correction tapes = $18.20 - $8.00
= $10.20
1 correction tape = $10.20 ÷ 3
= $3.40
1 pen = $9.10 - $3.40 - $3.40
= $9.10 - $6.80
= $2.30

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5)



6) 2 students mass = 45kg x 2
= 90kg

Take the number of students initially to be n,
$40n + 90 = 42(n + 2)$
$42n + 84 - 40n = 90$
$2n + 84 = 90$
$2n = 90 - 84$
$2n = 6$
$n = 3$

7)

a. $30 + 20 + 35 + 45 + 55 + 40 = 225$
$\frac{45}{225} \times 100\% = 20\%$

b. $55 - 40 = 15$
$\frac{15}{55} \times 100\% = 27.3\%$

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8) $41 x 7 = $287
$802 + $287 = $1089

Abel: ($1089 ÷ (4 + 7)) x 4 = $396
Benjamin: $802 - $396 = $406
Difference: $406 - $396 = $10

9) 1 cupcake = $1.70
2 cupcakes = $3.40
3 cupcakes = $4.25

$29 ÷ $4.25 = 6 r$3.50
6 x 3 = 18
18 + 2 = 20

10) 1 large parcel = x
1 small parcel = y
x – y = 70cm
x = y + 70cm
16x = 24y
16(y + 70cm) = 24y
16y + 1120cm = 24y
24y – 16y = 1120cm
8y = 1120cm
y = 140cm
24y = 3360cm
3360cm x 2 = 6720cm
=67.2m

11)
a. $\angle ABD = 180° - 40°$
$= 140°$
$\angle ABC = 140° + 20°$
$= 160°$
$\angle BCA = (180° - 160°) \div 2$
$= 10°$

b. $\angle AED = 180° - (360° - 89° - (180° - 20° - 10°))$
$= 59°$

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12)

a. Ratio 3 : 11 x 3 = 9 : 33
   9 + 1 = 10
   33 – 1 = 32
   Ratio of Alvin's savings to Bernard is 10 : 32

b. 9 : 33 (difference = 24)
   264 ÷ 24 = 11
   11 x 10 = 110

13)

a. 82 – (15 x 2) – 13 – 8 + (13 – 8) = 82 – 30 – 13 – 8 + 5
   = 36
   36 ÷ 2 = 18
   Length of the rectangular paper is 18cm

b. Area of rectangular paper = 18 x 15
   = 270cm^2
   Area of remaining paper = 270 – (13 x 5) – (5 x 3)
   = 270 – 65 – 15
   = 190cm^2

14)

a. 3 x 6 = 18
b. 8 x 5 = 40
   18 small = 8 small + 40
   10 small = 40
   1 small = 4
   1 large box = 4 + 5
   = 9

15) $\frac{100}{107}$ x \$256.80 = \$240
   $\frac{100}{80}$ x \$240 = \$300
   \$300 ÷ 8 = \$37.50

16) Total 5 circles

a. (8 + 6) x 2 = 28
   28units = 84cm
   1unit = 3cm
   6units = 18cm

b. 5 x πr^2 = **5 x 3.14 x 3 x 3**
   = 141.3cm^2

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c. $(5 \times 2 \times 3.14 \times 3) + 3(24 + 8) = 190.2\text{cm}$

17)

a. 24cm

b. Assume there is only two shelves in the bookstore, one only holds big album, another only holds small album.
Hence, $\frac{15}{21} = \frac{5}{7}$

c. $54 \times \frac{14}{6} = 126$

18)

a. $980 \div 35 \div 8 = 3.5$
Hence, 3 complete layers

b. $980 \div (35 \times 8 \times 20) = 0.175$
$= \frac{7}{40}$

c. $(35 \times 8) + 2(34 + 7)(19) - 980$
$= 280 + 1558 - 980$
$= 858\text{cubes}$

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