Primary 6 Solutions

Section A:

1. LCM of 2, 3, 4, 5, 6 and 7 = 420
   Largest 4-digit multiple of 420 = 420 × 23 = 9660
   The required number is 9660 + 1 = <u>9661</u>

2. $v^2 = 4 \times 9 = 36$
   v = <u>6</u>

3. Let the mass of a pumpkin, a pineapple and a pomelo be x, y and z respectively.
   To simplify the problem, remove 1 pumpkin from each plate.

   We then have:

$2y$	$2z$	$x + y$	$y + z$
(A)	(B)	(C)	(D)

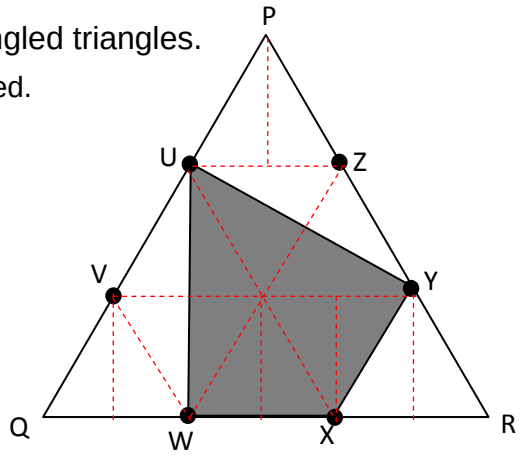
   Since $2y$ is less than $2z$, so y is less than z.
   Since $2z$ is less than $x + y$, and y is less than z, then x has to be more than z.
   Hence, y is less than z, which is less than x.

   Therefore, $y + z$ is less than $2z$ but more than $2y$, so D should be placed <u>between A and B</u>.

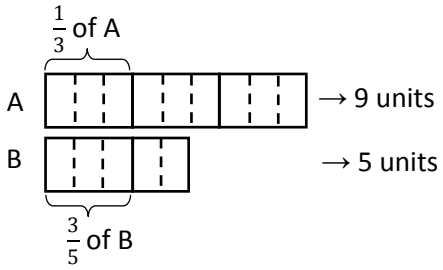
4. <u>81 653</u>

5. Since XV and XW are radii, then triangle VWX is an isosceles triangle and∠XVW and ∠VWX are equal.
   ∠VWX = 142° ÷ 2 = 71° (exterior angle = 2 interior opposite angles)
   ∠UYZ = <u>71</u>° (corresponding angles)

6. Divide triangle PQR into 18 smaller similar right-angled triangles.
   8 are shaded. Hence $\frac{8}{18}$ or $\frac{4}{9}$ of triangle PQR is shaded.



7.



Ratio of A to B is <u>9 : 5</u>.

8. Mark → 100 units
Daniel → 125 units
Jess → 80 units

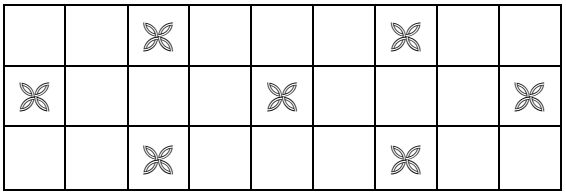
Daniel's 125 units → 100%
Jess' 80 units → $\frac{80}{125}$ ×100% = 64%
100% – 64% = 36%
Jess received <u>36% less than Daniel.</u>

9. $\frac{1}{\frac{1}{2}} = 1 \div \frac{1}{2} = 1 \times 2 = 2$

$\frac{1}{2} + 2 = 2\frac{1}{2}$

$(2\frac{1}{2})^2 = (\frac{5}{2})^2 = \frac{25}{4} = 6\frac{1}{4}$

10. <u>7 stickers</u>



Section B:

11. 1860 ÷ 4 = 465
$1 + 2 + 3 + \ldots + n = 465$
$\frac{(1+n)\times n}{2} = 465$
$(1 + n) \times n = 930$
n = <u>30</u>

12. 100 + 102 + 103 + 104 + 105 + 106 + 107 + 108 + 110 + 111 = 1056 kg
= 4 × Total mass of the five boys
Therefore, the total mass of the five boys = 1056 ÷ 4 = 264 kg

Arranging the boys in increasing order of mass and naming them a, b, c, d and e respectively, we can only know the following 4 equations for certain:

$a + b = 100$
$a + c = 102$
$c + e = 110$
$d + e = 111$

To find a:

Since $(a + b) + (d + e) + (a + c)$ = Total + a
Then a= $[(a + b) + (d + e) + (a + c)]$ – Total
= (100 + 111 + 102) – 264 = 49

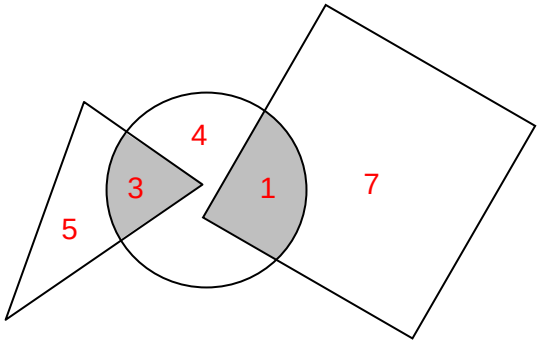
To find e:

Since $(a + b) + (d + e) + (c + e)$ = Total + e
Then e= $[a + b) + (d + e) + (c + e)]$ – Total
= (100 + 111 + 110) – 264 = 57

Difference between heaviest and lightest boy = 57 – 49 = <u>8 kg</u>

13. Total unshaded area = 16 units
Fraction of figure unshaded
$= \frac{16}{20} = \frac{4}{5}$

$\frac{4}{5}$ of the figure is unshaded.



14. 30% boys = 10 pupils + 40% girls
100% boys + 100% girls = 220 pupils
30% boys + 30% girls = 66 pupils
30% boys = 66 pupils – 30% girls
10 pupils + 40% girls = 66 pupils – 30% girls
70% girls = 56 pupils
100% girls = 80 pupils
220 – 80 = <u>140 boys</u>

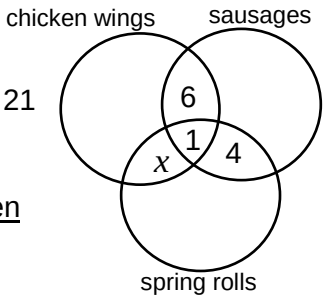
15. $\frac{n+3}{n-1} = 1\frac{4}{n-1}$

For $\frac{n+3}{n-1}$ to be a whole number, $\frac{4}{n-1}$ has to be a whole number.
That is, $(n-1)$ can only be 1, 2 or 4.Therefore n can only be 2, 3 or 5.
The sum of all possible values of n = 2 + 3 + 5 = <u>10</u>

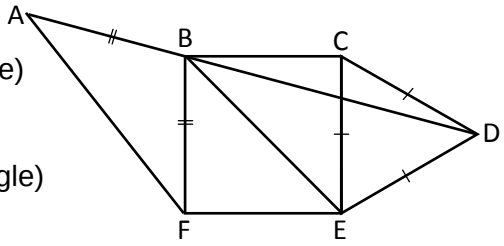
16. Know that $\frac{1}{x} - \frac{1}{y} = \frac{y-x}{xy}$
When y is 1 more than x (that is, x and y are consecutive),
Then, $\frac{1}{x} - \frac{1}{y} = \frac{1}{xy}$

Since 3540 = 2 × 2 × 3 × 5 × 59
= 60 × 59
Then, x = 59, y = 60

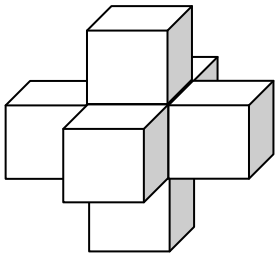
17. No. who ate only sausages = 19 – 1 – 4 – 6 = 8
No. who did not eat sausages = 87 – 8 = 79
No. who ate chicken wings but did not eat spring rolls = 79 – 58 = 21
No. who only ate chicken wings = 21 – 6 = 15
x = 54 – (15 + 6 + 1) = 32
No. who only ate 1 type of food = 87 – (6 + 1 + 4 + 32) = 44 children



18. ∠BCD = 90° + 60° = 150°
∠CBD = (180° – 150°) ÷ 2 = 15° (base ∠ of isosceles triangle)
∠DBF = 90° – 15° = 75°
∠ABF = 180° – 75° = 105°
∠BAF = (180° – 105°) ÷ 2 = 37.5° (base ∠ of isosceles triangle)



19. Volume of 1 cube = 1512 ÷ 7 = 216 cm^3
Length of each side = $\sqrt[3]{216}$ = 6 cm
Area of each face = 6 × 6 = 36 cm^2
Total number of faces = 5 faces each of 6 cubes = 30
Total surface area = 30 × 36 = 1080 cm^2

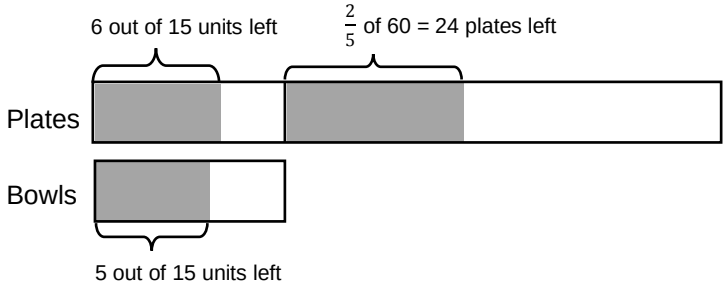


20. 76 – 74 = 2
(84 – 76) ÷ 2 = 4
Gracie took 4 tests before the one she scored 84%.
Total of 5 tests → 76 × 5 = 380
If Gracie scored full marks for last test, total of 6 tests → 380 + 100 = 480
480 ÷ 6 = 80
Her highest possible average is 80%.

Section C:

21. Plates left: $\frac{2}{5} = \frac{6}{15}$, $\frac{2}{5}$ of 60 = 24

Bowls left: $\frac{1}{3} = \frac{5}{15}$



6 + 5 = 11 units
11 units + 24 = 46
11 units = 46 – 24 = 22
1 unit → 2
At first: 15 units + 60 plates → (2 × 15) + 60 = <u>90 plates</u> at first.

22.

	red	:	blue	
After 23 red balls removed:	1	:	2	Total → $3x + 23$
After 80 blue balls removed:	5	:	1	Total → $6y + 80$

$3x + 23 = 6y + 80$
$3x = 6y + 57$
$x = 2y + 19$

$x + 23 = 5y$
$2y + 19 + 23 = 5y$
$3y = 42$
$y = 14$
$5y = 14 \times 5 =$ <u>70 red balls</u> in the box.

23. Considering worst case scenario, if he transfers 3 eggs of one colour (red) and 1 egg of another colour (green) to Hat 2, he now has in
Hat 2: 6 red, 4 green and 3 yellow
Hat 1: 0 red, 2 green and 3 yellow

Again considering the worst scenario, if he transfers all 3 yellow eggs first, then all 4 of the green eggs, he will need to transfer only 3 of the remaining 6 red eggs and he will have at least 3 of each colour in Hat 1. All in all, he needs to transfer 3 + 4 + 3 = <u>10 eggs</u>.

24. Ten boys played a total of 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 45 games.
3 points were given for a win-lost outcome and 2 points were given for a draw.
45 × 3 = 135 points would have been given out if there were no draws.
135 – 125 = 10 points
<u>10 games</u> were draws.

25. In 3 hours

A completed $3 \times \frac{1}{9} = \frac{1}{3}$ of mural

B completed $3 \times \frac{1}{10} = \frac{3}{10}$ of mural

$\frac{1}{3} + \frac{3}{10} = \frac{19}{30}$ of mural completed in 3 hours

$1 - \frac{19}{30} = \frac{11}{30}$ more to be done by B & C.

In 1 hour:

C painted $\frac{1}{12}$ of mural work.

B painted $\frac{1}{10}$ of mural work.

Total, in 1 hour, B & C painted

$\frac{1}{12} + \frac{1}{10} = \frac{11}{60}$ of mural.

Since $\frac{11}{30} = \frac{22}{60}$, and $\frac{11}{60}$ of the work took 1 hour, then $\frac{22}{60}$ of the work would take 2 hours.

Total time taken: 3 + 2 = <u>5 hours</u>