Answers - Place value to 10 000 and Roman numerals

Year: Year 4

Answer to Question 1

a. **4 632** (4 thousands, 6 hundreds, 3 tens, 2 ones).
b. **7 090**: 7 thousands, no hundreds, 9 tens, no ones.
c. **Five thousand, three hundred and eight**: there are no tens.
d. **Nine thousand and forty**: 9 thousands, 0 hundreds, 4 tens, 0 ones.

Answer to Question 2

Number	Th	H	T	O	Value of the digit
6 285	6	**2**	8	5	200
4 730	4	7	**3**	0	30
8 106	**8**	1	0	6	8000
2 599	2	5	9	**9**	9

Each value is the digit times the value of its column: $2 \times 100 = 200$, $3 \times 10 = 30$, $8 \times 1000 = 8000$ and $9 \times 1 = 9$.

Answer to Question 3

a. $3000 + 800 + 20 + 1$.
b. $5000 + 0 + 70 + 0$, which is $5000 + 70$.
c. $9000 + 0 + 0 + 9$, which is $9000 + 9$.
d. $6000 + 300 + 40 + 7 =$ **6 347**.

Answer to Question 4

a. 2 851 has the fewest thousands. For the three 5s compare hundreds: 5 218, 5 281, 5 812. Order: **2 851, 5 218, 5 281, 5 812**.
b. Compare hundreds: 7 900 first; then 7 090 and 7 099 have 0 hundreds; 7 009 has 0 tens. Order: **7 900, 7 099, 7 090, 7 009**.
c. $6\,482 > 6\,428$ (8 tens is more than 2 tens) and $3\,099 < 3\,101$ (0 hundreds is less than 1 hundred).

Answer to Question 5

a. Add 1000 each time: **5 340, 6 340, 7 340**.
b. Subtract 100 each time: **9 300, 9 200, 9 100**.
c. Add 7 each time: 28 + 7 = 35, 35 + 7 = 42, 42 + 7 = 49. The next three numbers are **35, 42, 49**.
d. Add 25 each time: **100, 125, 150**.

Answer to Question 6

Number	Nearest 10	Nearest 100	Nearest 1000
3 674	3 670	3 700	4 000
5 249	5 250	5 200	5 000
8 995	9 000	9 000	9 000

For 5 249: the ones digit is 9 so round the tens up to 5 250. The tens digit is 4 so we round the hundreds down. For 8 995 we round up every time because of the 9 and the 5.

Answer to Question 7

a. Both numbers have 4 thousands and 6 hundreds. Compare tens: Saturday has 3 tens and Sunday has 7 tens. So **Sunday** (4 673) had more fans.
b. 4 637: the tens digit is 3, so round down to **4 600**.
c. 4 673: the ones digit is 3, so round down to **4 670**.
d. 7 500 − 4 637 = 2 863. To the nearest 100 this is **2 900** fans.

Answer to Question 8

a. Fiction 3 258 rounds to **3 300**. Non-fiction 1 940 rounds to **1 900**. Picture books 2 062 rounds to **2 100**.
b. 3 258 → **3 000**. 1 940 → **2 000**. 2 062 → **2 000**.
c. Fiction has the most (3 258) and non-fiction has the fewest (1 940).
d. He is **right**. 1 940 rounds up to 2 000 and 2 062 rounds down to 2 000. But the real numbers are not the same: they are only equal after rounding.

Answer to Question 9

a. 2 035 has 0 hundreds, so it is smallest. 2 305 and 2 350 both have 3 hundreds, and 350 is bigger than 305. Order: **2 035, 2 305, 2 350**.
b. Zara has the most. 2 350 − 2 305 = **45 pennies** more than Sam.
c. 2 350 + 300 = **2 650 pennies** (3 × 100 = 300).

d. 2 305 + 50 = **2 355 pennies** (5 × 10 = 50).

Answer to Question 10

a. IX = 10 − 1 = 9 and XI = 10 + 1 = 11. **XI is bigger**.
b. 4 = **IV**, 7 = V + II = **VII**, 12 = X + II = **XII**.
c. XLVII = XL + VII = 40 + 7 = **47**.
d. 25 = XX + V = **XXV**; 75 = L + XX + V = **LXXV**.

Answer to Question 11

a. 25, 50, 75, 100, 125, 150, 175, **200**.
b. The sixth number is **150 biscuits**.
c. 4 boxes make 100, so 400 = 4 × 100 = 16 boxes. Check: 16 × 25 = 400. **16 boxes**.
d. 1 000 ÷ 25 = 40 (four boxes make 100, and 10 × 4 = 40). **40 boxes**.

Answer to Question 12

a. Ben Nevis (1 345 m) is the highest and Helvellyn (950 m) the lowest.
b. **1 345, 1 085, 978, 950**.
c. 1 345 → 1 300; 1 085 → 1 100; 978 → 1 000; 950 → 1 000.
d. **Scafell Pike and Helvellyn** both round to **1 000 m**.

Answer to Question 13

a. Ones = 3, so thousands = 6. The number is **6 503**.
b. **Six thousand, five hundred and three**.
c. The tens digit is 0, so we round down: **6 500**.
d. 6 503 + 1000 = **7 503**; 6 503 − 100 = **6 403**.

Answer to Question 14

a. Sunday (3 150) is the most and Monday (1 096) the fewest.
b. 1 296 → 1 300; 2 408 → 2 400; 3 150 → 3 200; 1 096 → 1 100.
c. 1 300 + 2 400 + 3 200 + 1 100 = **8 000**.
d. The estimate is exactly 8 000, so the school was **very close** to the target.
e. Friday: 1 296 → 1 000. Monday: 1 096 → 1 000. They **agree**: both round to 1 000, but 1 296 is about 200 bigger.

Answer to Question 15

a. Put the biggest digit first, then the next biggest: **8 530**.
b. The smallest digit that is not zero goes first, then 0, then 5, then 8: **3 058**.
c. The number must start with 8 and end in an even digit. The only even digit left is 0, so the last digit is 0. The other two digits are 3 and 5 in either order: 8 350 and 8 530. There are **2 answers**.
d. 8 530 → **9 000**. 3 058 → **3 000**. 9 000 − 3 000 = **6 000**.

Answer to Question 16

Building	Roman label	Number
Bridge arch	XCIV	94
Castle wall	LXXXVIII	88
Church bell	XLIX	49
Lighthouse	CVII	107

a. XCIV = 90 + 4 = 94; LXXXVIII = 50 + 30 + 8 = 88; XLIX = 40 + 9 = 49; CVII = 100 + 7 = 107.
b. The oldest is the **lighthouse (107)**; the youngest is the **church bell (49)**.
c. **49, 88, 94, 107**.
d. A letter I can only be taken away from V and X, not from C. 99 = 90 + 9 = XC + IX = **XCIX**.

Answer to Question 17

a. Compare hundreds first: Bexley 7, Ashby 7, Dunmore 6, Corfe 0. Between Bexley (2 760) and Ashby (2 706), 6 tens beats 0 tens. Order: **Bexley, Ashby, Dunmore, Corfe**.
b. 2 706 → **2 700**; 2 760 → **2 800**; 2 076 → **2 100**; 2 670 → **2 700**.
c. 2 700 + 2 800 + 2 100 + 2 700 = **10 300**. This is more than 10 000.
d. 2 706 + 2 760 + 2 076 + 2 670 = **10 212**, which is more than 10 000, so the lorry does **not** have enough space. Here the estimate gave the right answer, but if the exact total were 9 990 the estimate would be wrong, so we check with exact numbers.

Answer to Question 18

a. LIV = 50 + 4 = **54**; XLVI = 40 + 6 = **46**; LXIII = 50 + 10 + 3 = **63**; XCV = 90 + 5 = **95**.
b. **XLVI (46), LIV (54), LXIII (63), XCV (95)**.
c. 14 = X + IV = **XIV**; 29 = XX + IX = **XXIX**; 83 = L + XXX + III = **LXXXIII**.

d. The Romans took away only one smaller letter, and I can only be taken away from V and X, never twice. 8 = 5 + 3, so it is **VIII**.

Answer to Question 19

a. 4C has only 8 thousands, so it walked the least. The other three all have 9 thousands, so compare hundreds: 4D has 8, 4A has 4 and 4B has 0. Order: **4D, 4A, 4B, 4C**.
b. 9 480 → **9 500**; 9 048 → **9 000**; 8 940 → **8 900**; 9 804 → **9 800**.
c. 9 500 + 9 000 + 8 900 + 9 800 = 37 200, which is less than 40 000. Exact total: 9 480 + 9 048 + 8 940 + 9 804 = **37 272**. They did **not** reach the target; they were 2 728 steps short.
d. 9 048 − 8 940 = **108 steps**. That is about 100 steps, which is small compared with nine thousand, so she is **roughly right**.

Answer to Question 20

a. A number rounds to 5 900 if it is from 5 850 up to 5 949, so the smallest is **5 850** and the largest is **5 949**.
b. The thousands digit is 5. The ones digit is double the tens digit and it must be a single digit, so the tens digit is 0, 1, 2, 3 or 4. That means the hundreds digit cannot be 8 (the tens digit would have to be 5 or more), so it is 9. List the numbers: 5 900, 5 912, 5 924, 5 936, 5 948. Digit sums: 14, 17, 20, 23 and 26. Only 5 936 has digit sum 23 and four different digits (5 900 repeats digits). Zara’s number is **5 936**.