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# Chapter 1

## Numbers (C1)

### 1.1 Integers, factors, multiples, prime numbers

1. 0580\_P20\_QP\_10 Q: 1

Write seventeen thousand and seventeen in figures.

..... [1]

---

2. 0580\_P20\_QP\_10 Q: 17

Explain why  $\sqrt{3}$  is irrational.

..... [1]

---

3. 0580\_S20\_QP\_11 Q: 1

Write down the value of the 7 in the number 570 296.

..... [1]

---

4. 0580\_S20\_QP\_11 Q: 8

Find the highest **odd** number that is a factor of 60 and a factor of 90.

..... [1]

---

5. 0580\_S20\_QP\_12 Q: 1

(a) Write in figures the number fifty-three thousand and thirty-five.

..... [1]

(b) Write 8379 correct to the nearest hundred.

..... [1]

---

6. 0580\_S20\_QP\_12 Q: 3

Write down the reciprocal of 10.

..... [1]

---

7. 0580\_S20\_QP\_12 Q: 11

Write down

(a) a square number greater than 10,

..... [1]

(b) an irrational number.

..... [1]

---

8. 0580\_S20\_QP\_12 Q: 22

(a) Write down all the factors of 28.

..... [2]

(b) Write 54 as a product of its prime factors.

..... [2]

(c) Find the lowest common multiple (LCM) of 48 and 60.

..... [2]

---

9. 0580\_S20\_QP\_13 Q: 1

Write six hundred and seven thousand and twenty-one in figures.

..... [1]

---

10. 0580\_S20\_QP\_13 Q: 9

32      33      34      35      36      37      38      39

From this list of numbers, write down

(a) a multiple of 8,

..... [1]

(b) a square number,

..... [1]

(c) a prime number.

..... [1]

---

11. 0580\_M19\_QP\_12 Q: 10

Write down the six factors of 12.

....., ....., ....., ....., ....., ..... [2]

---

12. 0580\_S19\_QP\_11 Q: 14

27      28      29      30      31      32      33

From the list of numbers, write down

(a) a multiple of 7,

..... [1]

(b) a cube number,

..... [1]

(c) a prime number.

..... [1]

---

13. 0580\_S19\_QP\_12 Q: 1

Write 30 682 in words.

..... [1]

---

14. 0580\_S19\_QP\_12 Q: 11

Find the highest common factor (HCF) of 90 and 48.

..... [2]

---



15. 0580\_S19\_QP\_12 Q: 17

(a) Show that there is not a square number between 50 and 60.

[2]

(b) Write down a prime number between 50 and 60.

..... [1]



16. 0580\_S19\_QP\_12 Q: 22

Gerry and Alain run around a running track.

To run around the track once

- Gerry always takes 90 seconds
- Alain always takes 105 seconds.

They start together at the same point.

After how many minutes are they next together at that point?

..... min [3]

17. 0580\_S19\_QP\_13 Q: 10

Here is a list of numbers.

21             $\frac{2}{3}$              $\sqrt{13}$             31             $\sqrt{121}$             51            0.7

From this list, write down

**(a)** a prime number,

..... [1]

**(b)** an irrational number.

..... [1]

82. 0580\_W12\_QP\_12 Q: 10

- 12      13      14      15      16      17      18

From the list of numbers, write down

(a) a factor of 36,

Answer(a) ..... [1]

(b) a multiple of 8,

Answer(b) ..... [1]

(c) a prime factor of 52.

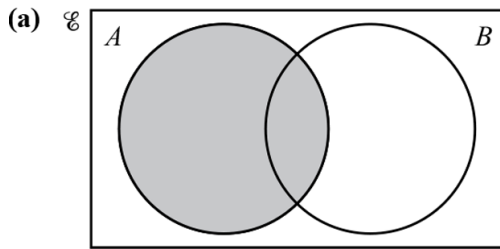
Answer(c) ..... [1]

---

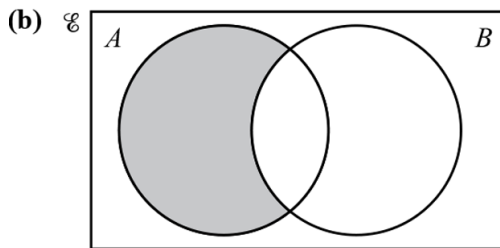
### 1.2 Venn diagram, sets

83. 0580\_P20\_QP\_10 Q: 20

Use set notation to describe the shaded regions in each Venn diagram.



..... [1]



..... [1]

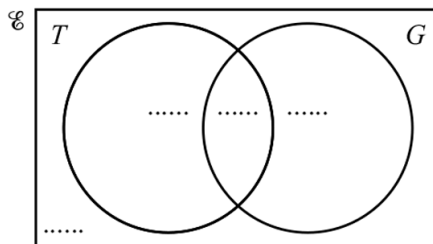
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84. 0580\_P20\_QP\_10 Q: 23

- $\mathcal{E} = \{\text{children who go to the park}\}$
- $T = \{\text{children who play tennis}\}$
- $G = \{\text{children who play golf}\}$

120 children go to the park.  
 50 play tennis.  
 75 play golf.  
 25 do not play tennis or golf.

(a) Complete the Venn diagram.



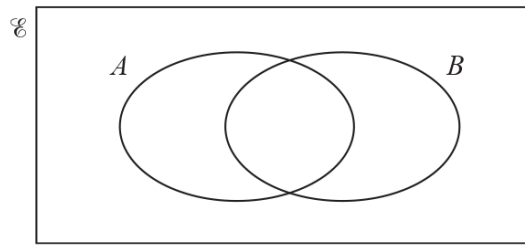
[2]

(b) Find  $n(T \cap G)$ .

..... [1]

85. 0580\_S20\_QP\_12 Q: 16

(a)

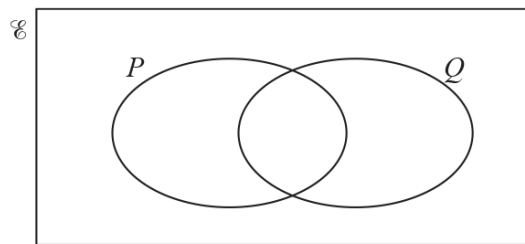


On the Venn diagram, shade the region  $A \cap B$ .

[1]

(b)

- $U = \{1, 2, 3, 4, 5, 6\}$
- $P = \{x : x \text{ is an even number}\}$
- $Q = \{x : x \text{ is a prime number}\}$



Complete the Venn diagram.

[2]

### 1.3 Squares, cubes, roots

86. 0580\_W14\_QP\_12 Q: 18

Find

(a) the cube root of 729,

Answer(a) ..... [1]

(b) the two square roots of 225,

Answer(b) ..... and ..... [2]

(c) a common multiple of 6 and 9,

Answer(c) ..... [1]

(d)  $(-4)^2$ .

Answer(d) ..... [1]

87. 0580\_W14\_QP\_13 Q: 7

Find the value of

(a)  $\sqrt[3]{2744}$ ,

Answer(a) ..... [1]

(b)  $6^4$ .

Answer(b) ..... [1]

88. 0580\_W12\_QP\_13 Q: 3

Work out.

$$4^3 - \sqrt{49}$$

Answer ..... [2]

### 1.4 Directed numbers

89. 0580\_M20\_QP\_12 Q: 3

- (a) The temperature on Monday was  $-7^\circ\text{C}$ .  
 The temperature on Tuesday was  $5^\circ\text{C}$  lower than on Monday.  
 The temperature on Wednesday was  $8^\circ\text{C}$  higher than on Tuesday.

Find the temperature on Wednesday.

.....  $^\circ\text{C}$  [2]

- (b) Kyra has a faulty thermometer.  
 It always shows the temperature as  $2^\circ\text{C}$  higher than the actual temperature.  
 The temperature on the thermometer is  $T^\circ\text{C}$ .

Write an expression, in terms of  $T$ , for the actual temperature.

.....  $^\circ\text{C}$  [1]

90. 0580\_M19\_QP\_12 Q: 4

The temperature at 0700 is  $-3^{\circ}\text{C}$ .

This temperature is  $11^{\circ}\text{C}$  higher than the temperature at 0100.

Find the temperature at 0100.

..... $^{\circ}\text{C}$  [1]

---

91. 0580\_S19\_QP\_11 Q: 5

(a) On Monday the temperature at midday is  $4^{\circ}\text{C}$  and the temperature at midnight is  $-3^{\circ}\text{C}$ .

Work out the difference between these two temperatures.

..... $^{\circ}\text{C}$  [1]

(b) On Wednesday the temperature at midday is  $-1^{\circ}\text{C}$ .

By 7 pm the temperature has fallen by  $4^{\circ}\text{C}$ .

Work out the temperature at 7 pm.

..... $^{\circ}\text{C}$  [1]

---

92. 0580\_W19\_QP\_12 Q: 2

The lowest temperature recorded at Scott Base in Antarctica is  $-57.0^{\circ}\text{C}$ .

The highest temperature recorded at Scott Base is  $63.8^{\circ}\text{C}$  more than this.

What is the highest temperature recorded at Scott Base?

..... $^{\circ}\text{C}$  [1]

---

93. 0580\_W19\_QP\_13 Q: 6

(a) Write down the temperature that is  $7^{\circ}\text{C}$  below  $-3^{\circ}\text{C}$ .

..... $^{\circ}\text{C}$  [1]

(b) Work out the difference in temperature between  $-4^{\circ}\text{C}$  and  $4^{\circ}\text{C}$ .

..... $^{\circ}\text{C}$  [1]

---

94. 0580\_M18\_QP\_12 Q: 3

“We eat more ice cream as the temperature rises.”

What type of correlation is this?

..... [1]

---

95. 0580\_W18\_QP\_11 Q: 9

(a) On Monday, the lowest temperature was  $-12^{\circ}\text{C}$ .  
The highest temperature was  $4^{\circ}\text{C}$ .

Work out the difference between these temperatures.

..... $^{\circ}\text{C}$  [1]

(b) On Tuesday, the highest temperature was  $-3^{\circ}\text{C}$ .  
The lowest temperature was  $8^{\circ}\text{C}$  lower than this.

Work out the lowest temperature on Tuesday.

..... $^{\circ}\text{C}$  [1]

---



# Appendix A

## Answers

1. 0580\_P20\_MS\_10 Q: 1

	Answer	Mark	Partial Marks
	17017	1	

2. 0580\_P20\_MS\_10 Q: 17

	Answer	Mark	Partial Marks
	Cannot be written as a fraction oe	1	Accept 3 is a prime number Accept decimal going on forever with no pattern oe

3. 0580\_S20\_MS\_11 Q: 1

	Answer	Mark	Partial Marks
	70000	1	

4. 0580\_S20\_MS\_11 Q: 8

	Answer	Mark	Partial Marks
	15	1	

5. 0580\_S20\_MS\_12 Q: 1

	Answer	Mark	Partial Marks
(a)	53035	1	
(b)	8400	1	

6. 0580\_S20\_MS\_12 Q: 3

	Answer	Mark	Partial Marks
	$\frac{1}{10}$	1	

7. 0580\_S20\_MS\_12 Q: 11

	Answer	Mark	Partial Marks
(a)	Any square number greater than 10	1	
(b)	Any irrational number	1	

8. 0580\_S20\_MS\_12 Q: 22

	Answer	Mark	Partial Marks
(a)	1 2 4 7 14 28	2	<b>B1</b> for 4 or 5 correct with no extras or 6 correct with one extra
(b)	$2 \times 3 \times 3 \times 3$ or $2 \times 3^3$	2	<b>M1</b> for 2, 3, 3, 3 or correct factor tree
(c)	240	2	<b>M1</b> for $48 = 2, 2, 2, 2, 3$ or $60 = 2, 2, 3, 5$ or list of multiples of both 48 and 60, at least 3 of each or <b>B1</b> for $240k$

9. 0580\_S20\_MS\_13 Q: 1

	Answer	Mark	Partial Marks
	607021	1	

10. 0580\_S20\_MS\_13 Q: 9

	Answer	Mark	Partial Marks
(a)	32	1	
(b)	36	1	
(c)	37	1	

11. 0580\_M19\_MS\_12 Q: 10

	Answer	Mark	Partial Marks
	1, 2, 3, 4, 6, 12	2	<b>B1</b> for 4 correct factors and no errors or 5 factors and 1 error

12. 0580\_S19\_MS\_11 Q: 14

	Answer	Mark	Partial Marks
(a)	28	1	
(b)	27	1	
(c)	29 or 31	1	

13. 0580\_S19\_MS\_12 Q: 1

	Answer	Mark	Partial Marks
	Thirty thousand six hundred [and] eighty-two	1	

14. 0580\_S19\_MS\_12 Q: 11

	Answer	Mark	Partial Marks
	6	2	<b>M1</b> for $2 \times 3^2 \times 5$ or $2^4 \times 3$ or for $2 \times 3$ as final answer or <b>B1</b> for 2 or 3 as final answer

15. 0580\_S19\_MS\_12 Q: 17

	Answer	Mark	Partial Marks
(a)	$7^2 = 49$ and $8^2 = 64$ or $\sqrt{49} = 7$ and $\sqrt{64} = 8$	2	<b>B1</b> for $7^2 = 49$ or $8^2 = 64$ or 49 and 64 or values of at least $\sqrt{50}$ (or $\sqrt{51}$ ) and $\sqrt{59}$ (or $\sqrt{60}$ ) without further comment
(b)	53 or 59	1	

16. 0580\_S19\_MS\_12 Q: 22

	Answer	Mark	Partial Marks
	10.5 oe isw	3	<b>B2</b> for 630 or <b>M1</b> for $630k$ or <b>B1</b> for 3 correct multiples of each

17. 0580\_S19\_MS\_13 Q: 10

	Answer	Mark	Partial Marks
(a)	31 or $\sqrt{121}$	1	
(b)	$\sqrt{13}$	1	