

Answers

Orange



1. Use the alphabet to break the sequences.
- a. m, 16 [add 3]
 - b. 19, 25 [add 6]
 - c. k, f [subtract 5]
 - d. 14, 13, 17 [+4, +2, -1], repeat

2. Alessandra 13
Antonio 11

3. Fumiko wakes → 7:11am
Dressed → 7:15am
Brush hair → 7:26am
Eat & teeth → 7:35am
Dog walk → 7:47am
Pack bag → 7:50am

- 4a. $3 + 7 = 10$ $3 \times 7 = 21$
- b. $7 + 6 = 13$ $7 - 6 = 1$
- c. $10 \times 2 = 20$ $10 - 2 = 8$
- d. $7 \times 4 = 28$ $7 + 4 = 11$

5. 2
 1 3 5
 4

Sum is 9 in both directions

- 6a. $2 + 3 + 4 = 9$
- b. $4 \times 5 \div 2 = 10$
- c. $5 \times 3 - 2 = 13$
- d. $3 \times 5 + 4 = 19$

<u>Week</u>	<u>Dogs</u>	<u>Earnings</u>
1	4	12
2	6	18
3	8	24
4	10	30
5	12	36
6	14	42
7	16	48
Total = 70 dogs for \$210		

Maths Challenge Cards

8. "How many people must play in a game of netball?"
Answer = 14

9. $30 \text{ stickers} \div 5 = 6$ each
6 is median \Rightarrow middle brother
Eldest to youngest receive
 $10 + 8 + 6 + 4 + 2 = 30$

10. $4(\Psi) + 4(\Psi) = 8$
Therefore $2 + 2 = 4$
 $\Theta = 2$
 $\Psi = 4$
 $\Delta = 6$

11. Nikita $\$3 \div 10 = 30\text{¢}$ frog
Tanita $\$3 \div 20 = 15\text{¢}$ rasp.

12. Squares (17) Rectangles (34)

13 x 1's	15 x 2's
4 x 4's	8 x 3's
	4 x 4's
	2 x 5's
	4 x 6's
	1 x 8's

Total 51 shapes

13a. $(5 + 7) \div 4 = 3$
b. $4 + 7 - 6 = 5$
 or $4 + 6 - 5 = 5$
c. $6 \times 5 - 7 = 23$
d. $7 \times 5 + 4 = 39$

14. $31 - 10 = 21$ minutes skating
 $21 \div 3 = 7$ min per km.
4km at 7 min per km
= 28 minutes to Kristy's

Answers

Orange



15. Work backwards
Tekori 5 tries
Tane 4 tries
Jonah 18 tries
Loki 30 tries
Total 57 tries
16. $16 \text{ prints} \div 4 = 4 \text{ cats}$
 $16 \text{ tails} - 4 \text{ cats} \Rightarrow 12 \text{ fish}$
17. Process of elimination
Mystery number is 123
18. $14 \text{ loops} \times 31 \text{ days in March} = 434 \text{ yellow loops}$
19. "Guess & revise" or algebra
 $141 \text{ cards} \div 3 = 47 \text{ cards}$
Diego 94 [$47 \times 2 = 94$]
Pablo 47
- 20a. 11, 16, 22 [+1,2,3,4,5,6...]
b. 15, $12 \frac{1}{2}$, $9 \frac{1}{2}$ [$-\frac{1}{2}, 1, 1\frac{1}{2}, \dots$]
c. q, u, y [add 4 letters]
d. 72, 89, 107 [+13,14,15,16..]
21. Use/draw a calendar
Sunday 1st
Friday 13th

22.

2	7	6
9	5	1
4	3	8

All lines add to 15

Maths Challenge Cards

23. $\$4 \div 80\text{c} = 5 \text{ tennis balls}$
 $\$4 \div 50\text{c} = 8 \text{ golf balls}$
24. Three years ago
Sigmund 6 & Id 3
Sigmund is 12 years old
Id is 6 years old
25. Isaac – magazine
Clea – *Harry Potter*
Abigail – *Just Tricking*
Elias – *The Lost World*
26. Etienne
 $60 \div 3 = 20 \text{ per hour}$
Elodie
 $60 \div 5 = 12 \text{ per hour}$
 \Rightarrow Etienne sucks 8 more gobstoppers per hour
27. $\aleph = \Phi\Phi\Phi$
 $\Theta\Theta = \Phi\Phi\Phi\Phi\Phi\Phi\Phi\Phi$
Therefore
 $\Theta = \Phi\Phi\Phi\Phi$
28. Process of elimination
Mystery number is 9853
- 29.
- | | | |
|----|----|----|
| 18 | 11 | 16 |
| 13 | 15 | 17 |
| 14 | 19 | 12 |
- All lines add to 45
30. June has 30 days \Rightarrow 6 rotations
Mustaf consumes in total
12 tins, 6 bones, 600 biscuits

Answers

Orange



- 31a. $6 \div 3 \times 4 = 8$
b. $6 \times 5 \div 3 = 10$
c. $4 \times 3 - 5 = 7$
d. $5 \times (6 + 3) = 45$
32. 52×2 calls = 104 calls
Maria 69 or 70 calls
Mario 35 or 34 calls
Depending on who called first
33. 238 is the answer
Even, 3 'tens', 7 is a factor
34. Distances Mani measured
50, 45, 40, 35, 30,
25, 20, 15, 10, 5
Pair them $(0 + 55) = 55$, etc.
 $5 \times 55\text{m (pairs)} =$
275 metres in total
- 35.
- | | | | |
|---|----|----|----|
| 6 | 7 | 8 | 9 |
| 2 | 4 | 6 | 8 |
| 5 | 8 | 11 | 14 |
| 6 | 10 | 14 | 18 |
36. $1 + 2 + 3 + 4 + 5 + 6$
 $+ 7 + 8 + 9 + 10$
 $= 55$
Clarissa is 10 years old
- 37a. 20, 21 [+5, +4, +3...]
b. 17, 33 [$\times 2$, - 1] repeat
c. 8, 2 [2^{nd} number = $1^{\text{st}} \div 4$
 3^{rd} no. = $1^{\text{st}} - 4$] repeat
d. $6, 8 \frac{1}{2}$ [$+ \frac{1}{2}$, +1, $+1 \frac{1}{2}$, ...]

Maths Challenge Cards

38. 83 hours – 11 hours rest
= 72 hours scurrying
 $72 \times 12\text{m per hour} =$
864 metres
39. $2002 - 1942 = 60$ years
 $60 \div 5 = 12$ years
 $2002 - 12 = 1990$
Roslyn was born
40. Use/create a number chart
Answers 11, 13, 16, 18, 23
41. $23 \times 12 = 276$ minutes
of riding time
= 4 hours + 36 minutes
Finish time $\Rightarrow 2:36\text{pm}$
42. Pattern +2, +4, +6, +8, ...
 $\Rightarrow 42 + 14 = 56$
43. "Guess & revise" or algebra
 $x = \text{Cassie's biscuits}$
 $4x + 2x + x = 84$
 $\Rightarrow 7x = 84, x = 12$
Zoe (4x) 48
Ben (2x) 24
Cassie (x) 12
44. Playing with the division key
 $1 \div 2 = \frac{1}{2} = 0.5$
 $2 \div 3 = \frac{2}{3} = 0.666$
 $3 \div 4 = \frac{3}{4} = 0.75$
 $4 \div 5 = \frac{4}{5} = 0.8$
 $5 \div 6 = \frac{5}{6} = 0.833$
 $6 \div 7 = \frac{6}{7} = 0.857$
45. 15
16 17 18
19
Sum is 51 in both directions

Answers

Orange



46. $60 \div 5 = 12$ cards each
12 is median = middle sister
Eldest to youngest receive
 $20 + 16 + 12 + 8 + 4 =$
60 swap cards

47.

+	3	5	6
4	7	9	10
1	4	6	7
6	9	11	12
2	5	7	8

48. "How many seconds does it take light to travel from the sun to earth?"
Approximately 8 seconds

49. ♀ = 6 or 8 ♦ = 9
😊 = 8 or 6 ■ = 2
👍 = 6 ✍️ = 7
➔ = 3

50. Maxi runs
There $3\text{km} \times 2 = 6\text{km}$
Back $3\text{km} + 1\text{km} = 4\text{km}$
10km in total

51. "Guess & revise" or algebra
Abdul is 'x' years
 $2x + x + (x - 2) = 26$
 $\Rightarrow 4x - 2 = 26,$
 $\Rightarrow 4x = 28, \text{ so } x = 7$
Inzaman is 14 years old
Abdul is 7 years old
Azim is 5 years old

Maths Challenge Cards

52. Process of elimination
37 or 19
53. 36 swap cards
 $36 \div 3 = 12$
 $36 \div 5 = 7$ with 1 remainder
 $36 \div 4 = 9$
54. Work in reverse
a. $(13 - 4) \div 3 = 3$
b. $(36 \div 9) + 6 = 10$
c. $(15 + 5) \times 2 = 40$
55. "Guess & revise" or algebra
Bathers cost 'x' dollars
 $x + (x - 5) + (x + 10) = 50$
 $\Rightarrow 3x + 5 = 50$
 $\Rightarrow 3x = 45, \text{ so } x = 15$
Bathers \$15
Hat \$10
Top \$25
56. "Guess & revise" or algebra
Marco has 'x' stamps
 $x + (x + 150) = 1300$
 $\Rightarrow 2x + 150 = 1300$
 $\Rightarrow 2x = 1150, \text{ so } x = 575$
Marco has 575 stamps
Tobias has $575 + 150 =$
725 stamps
- 57.

2	6	X	1
X	0	4	7
2	X	3	2
6	4	3	X

Answers

Orange



58. "Guess & revise" or algebra
Twins are 'x' years
 $2x + (x + 9) = 30$
 $\Rightarrow 3x + 9 = 30$
 $\Rightarrow 3x = 21$, so $x = 7$
Twins are 7 years old
Libby is 16 years old

59. ♀ = 4 or 9 ♦ = 8
☺ = 9 or 4 ■ = 6
🐾 = 5 🌲 = 2
□ = 7

60. "Guess & revise" or algebra
Siobhan has 'x' marbles
 $x + (x - 4) + (x - 8) = 30$
 $\Rightarrow 3x - 12 = 30$
 $\Rightarrow 3x = 42$, so $x = 14$
Siobhan 14 marbles
Briana 10 marbles
Tamsyn 6 marbles

61. Work in reverse
a. $(15 - 5) \div 2 = 5$
b. $(17 + 7) \div 3 = 8$
c. $[(10 \times 3) - 6] \div 2 = 12$

62. Multiplication table
1st row 9 not needed
2nd row 4 not needed
3rd row 5 not needed
4th row 2 not needed

63. "Guess & revise" or algebra
Book costs 'x' dollars
 $(x + 6) + x + (x - 7) = 50$
 $\Rightarrow 3x - 1 = 50$, so $x = 17$
Cd \$23
Book \$17
Cards \$10

Maths Challenge Cards

64. Jin $\$4 \div 5 = 80\text{¢}$ per python
Tao $\$4 \div 20 = 20\text{¢}$ per lolly lizard
65. $30 \text{ min} - 5 \text{ min} - 1 \text{ min} = 24 \text{ minutes riding}$
 $24 \div 4 = 6 \text{ minutes per km}$
Therefore, to ride to Andy's
 $7\frac{1}{2} \times 6 = 45 \text{ minutes}$
66. "People who believe in themselves and always try their best have a positive what?"
 $1 + 20 + 20 + 9 + 20 + 21 + 4 + 5 = 100$
Answer is "Attitude"
67. Work in reverse
Emma 10
Daisy $10 \times 2 = 20$
Dean $20 + 5 = 25$
Tom $25 + 6 = 31$
Lucy $31 + 3 = 34$
Total = 120
Each chain
 $\Rightarrow 120 \div 5 = 24 \text{ daisies}$
68. Triangles (16) Squares (14)
12 small 9 x 1's
4 large 4 x 4's
 1 x 9's
Total 30 shapes
- 69a. $5 \times 6 + 9 = 39$
b. $8 \times 5 - 7 = 33$
or $6 \times 7 - 9 = 33$
c. $9 + 8 - 6 = 11$
d. $7 + 5 + 9 = 21$
or $6 + 7 + 8 = 21$

Answers

Orange



70. Stuart wakes at 5:18am
Dress & pack → 5:26am
Breakfast → 5:37am
Bathroom → 5:43am
Driving → 6:00am
Swimming → 7:30am
Changing → 7:42am
Eating → 7:51am
Walking takes 9 minutes
8am arrives at school

- 71a. N, S [alphabet +5 -2]
b. 20, 18 [+4 -2]
c. K, P [+1 +2 +3 +4...]
d. 14, Q [+3 mix]

72.	<u>Days</u>	<u>Daily cars</u>	<u>Total cars</u>
	1,2,3	2	6
	4,5,6	3	9
	7,8,9	4	12
	10,11,12	5	15
	13,14	6	12

Therefore Vasily washes
58 cars at \$3 each
 $54 \times \$3 = \162

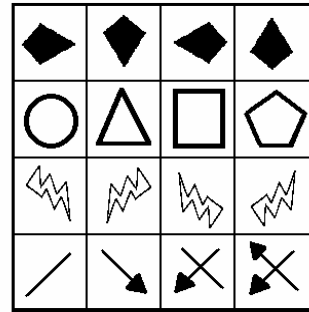
73. "Guess & revise" or algebra
Chin is 'x' years
 $(x - 3) + x + (x + 4) = 22$
 $3x + 1 = 22$, so $x = 7$
Chin 7 years
Ho 4 years
Sun 11 years

- 74a. $5 + 5 = 10$ $5 \times 5 = 25$
b. $9 \times 4 = 36$ $9 - 4 = 5$
c. $19 - 7 = 12$ $19 + 7 = 26$
d. $4 + 8 = 12$ $4 \times 8 = 32$

Maths Challenge Cards

75. "Guess & revise" or algebra
Adult tickets = $2y \Rightarrow 2 \times 2y = 4y$
Child tickets = $y \Rightarrow 3 \times y = 3y$
Total tickets = $7y = \$42$
 $\$42 \div 7 = \6 per child ticket
Therefore adult tickets cost \$12

76.



77. Trial and error

$$\psi = 2 \quad \Pi = 3$$
$$\infty = 6 \quad \Sigma = 7 \quad \notin = 9$$

78.

-	28	14	18
7	21	7	11
9	19	5	9
3	25	11	15

79. Doubling pattern for 10 weeks
 $5\text{¢} + 10\text{¢} + 20\text{¢} + 40\text{¢} +$
 $80\text{¢} + \$1.60 + \$3.20 +$
 $\$6.40 + \$12.80 + \$25.60$
 $= \$51.15$
Previously $\$3.50 \times 10 = \35

80. 1 set of 3 laps takes 8 minutes
 $\Rightarrow 120 \div 8 = 15$ sets
 15×3 laps =
45 laps in total

Answers**Orange**

81. Arithmetic reasoning

$$\Pi = 3$$

$$\notin = 4$$

$$\leftrightarrow = 5$$

$$\Omega = 6$$

82. "Guess & revise" or algebra

Elizabeth sells 'x' tulips

$$2x + x + (2x - 11) + 1 = 100$$

$$\Rightarrow 5x - 10 = 100$$

$$\Rightarrow 5x = 100, \text{ so } x = 22$$

$$\text{Tulips} = 22$$

$$\text{Roses} = 44$$

$$\text{Irises} = 33$$

[kept 1 'flower' for herself]

83. $\$3.60 \div 60\text{¢} =$

6 nectarines

$$18 - 6 = 12$$

$$\$9.60 \div 12 =$$

80¢ for a peach

84. "Guess & revise" or

Set-up a table

Answer

3 cats

12 sparrows

8 pigeons

4 blackbirds

$$(3 \times 4) + (24 \times 2) = 12 + 48 \Rightarrow$$

60 legs & 27 heads

Maths Challenge Cards85. 1st Set-up a table

<u>Day</u>	<u>Dogs</u>	<u>Cats</u>
1	1	2
2	2	4
3	3	6
4	4	8
5	5	10
6	6	12
7	7	14
<u>Total</u>	<u>28</u>	<u>56</u>

2nd "Guess & revise" or algebraCosts

$$\text{Let } y = \$\text{cat, so dog} \Rightarrow 3y$$

$$\text{Dogs } 28 \times 3y = 84y$$

$$\text{Cats } 56 \times y = 56y$$

Therefore

$$84y + 56y = 140y$$

$$140y = \$280, \text{ so } y = \$2$$

AnswerWashing prices \Rightarrow

Cat \$2 & Dog \$6

86. 1st half

$$5\text{km @ } 20\text{km/h} = 15\text{min}$$

2nd half

$$15 \times 2 = 30 \text{ min}$$

Total

$$15 + 30 + 5 [\text{break}] \Rightarrow 50 \text{ min}$$

87. Arithmetic reasoning

$$\Psi = 3$$

$$\phi = 4$$

$$\emptyset = 5$$

$$\leftrightarrow = 6$$

$$\Sigma = 7$$

$$\# = 8$$

Answers

Orange



88. “Guess & revise” or algebra

Let a child’s ticket cost x dollars

$$3x + 2(x + 5) = \$70$$

$$\Rightarrow 5x + 10 = 70$$

$$\Rightarrow 5x = 60, \text{ so } x = 12$$

Answer

Child ticket \$12

Adult ticket \$17

89. Set-up an answer table
[30 questions → 48 points]

<u>Correct</u>	<u>Incorrect</u>	<u>Points</u>
30	0	60
29	1	57
28	2	54
27	3	51
26	4	48

Answer

26 correct answers

Maths Challenge Cards

90. Work in reverse
Split = $1 - \frac{1}{2} - \frac{1}{4} = \frac{1}{4}$
Family receive $\frac{1}{4}$
 $(5 \times 4) \times 6 = 120$
 $120 + 5$ [dog] = 125 in total
Friends = $125 \times 2 = 250$
Jack kept $\frac{1}{4}$ for himself = 125

$$\text{Total} = 125 + 250 + 125$$

$$\Rightarrow 500 \text{ jelly beans}$$

Challenges 91 → 100

These are open-ended questions, with no set solutions. Please refer to introductory sheet 3 for a thorough explanation.