



1. Many solutions possible
Examples include:
 $\pounds 2 + \pounds 1 + 50\text{p} + 10\text{p} + 5\text{p}$
 $(3 \times \pounds 1) + (3 \times 20\text{p}) + 5\text{p}$
 $(7 \times 50\text{p}) + (3 \times 5\text{p})$
 $(10 \times 20\text{p}) + (16 \times 10\text{p}) + 5\text{p}$
2. Circle 1 $\rightarrow 5 + 6 + 9$
 Circle 2 $\rightarrow 11 + 8 + 1$
 Circle 3 $\rightarrow 10 + 7 + 3$
 Circle 4 $\rightarrow 9 + 8 + 3$
 Circle 5 $\rightarrow 12 + 3 + 5$
 Circle 6 $\rightarrow 4 + 7 + 9$
3. Many solutions possible
Teacher to assess diagrams
4. Logan will write:
 $5 \text{ days} \times 2 \text{ pages} \times 12 \text{ weeks}$
 $= 120 \text{ pages}$
 Ashley will write:
 $5 \text{ days} \times \frac{1}{2} \text{ page} \times 12 \text{ weeks}$
 $= 30 \text{ pages}$
 Pages in work books:
 Ashley $200 - 30 = 170$
 Logan $200 - 120 = 80$
 Ashley has 90 more pages
5. Many answers possible
Examples include:
 $25 \rightarrow 21 + 4$ or $10 + 15$
 $25 \rightarrow 12 + 8 + 5$ or $5 + 17 + 3$
 $25 \rightarrow 100 \div 4$
 $25 \rightarrow 32 - 7$ or $75 - 50$
 $25 \rightarrow 5 \times 5$ or 1×25
 $25 \rightarrow 30 - 5$ or $20 + 5$
 $25 \rightarrow (90 \div 6) + (5 \times 2)$
6. Triangular Prism
7. a) $(24 \times 3) + 18 = 90$ beads
 b) $24 \times 4 = 96$ beads
 She needed 6 more beads
8. Two digits numbers making 8
 17, 26, 44, 53, 62, 71, 80
9. Teacher to assess graphs
10. One solution possible:
 5 children $\rightarrow 5 \times \pounds 7 = \pounds 35$
 1 adult $\rightarrow 1 \times \pounds 14.50 = \pounds 14.50$
11. Top left grid Rule = +3
 [9, 10, 12, 14]
 Top right grid Rule = -8
 [20, 13, 14, 16, 25, 17]
 Bottom left grid Rule = +5
 [17, 14, 21, 23, 20, 25]
 Bottom right Rule = -9
 [6, 20, 11, 30, 21, 26]
12. 6 choices \times 6 choices =
 36 possible solutions
 Teacher to assess drawings
13. Raoul spent
 $\pounds 1.20 + \pounds 1.50 + \pounds 1.85 = \pounds 4.55$
 Change from $\pounds 5 \rightarrow 45\text{p}$
 $20\text{p} + 10\text{p} + 5\text{p} + 5\text{p} + 5\text{p}$
 $20\text{p} + 20\text{p} + 2\text{p} + 2\text{p} + 1\text{p}$
 $10\text{p} + 10\text{p} + 10\text{p} + 10\text{p} + 5\text{p}$
14. a) 16, 19 [uses + 3]
 b) 27, 15 [uses - 6]
 c) 16, 32 [doubling]
 d) 41, 50 [uses + 9]
 e) 36, 12 [uses - 12]
 f) 36, 43 [uses + 7]

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Maths Challenge Cards

15. x1 triangles = 8
 x2 triangles = 4
 x4 triangles = 2
 Total triangles = 14

16. Billy is 4 years old
 Carly is 6 years old
 Nick is 12 years old

17.

6	14	13
18	11	4
9	8	16

18. Seven letters fit the rule:
 A F H K N Y Z

19. 26 pages x 6 nights = 156 pg

20. Answers as per card layout:

10	5
25	12
5	13
60	10
9	
3	

21. Many solutions possible
 Teacher to assess tallies
 Least tosses to 50 ⇒ 9 tosses

22. Student numbers:
 $(5 \times 15) + (2 \times 10) = 95$
 95 sausages eaten & 25 left
 95 x 2 each = 190 sausages

23. 19 → a e i
 20 → b k n
 21 → d f j
 22 → h l m
 23 → c g o

24.

○		□ △	△ ○
	○ △	○ □	□ △
—	=	—	=
		≡	≡ ≡
△ ○	▷ ●	▽ ●	◀ ●
□ ●	□ ●	□ ●	□ ●
●	●	● =	● —
=	—	●	●

25. Lea bought:
 $3 \times 50p = \text{£}1.50$
 Kelsey bought:
 $6 \times 30p = \text{£}1.80$
 Change from £5:
 $\text{£}5 - \text{£}1.50 - \text{£}1.80 = \text{£}1.70$

26. a) 8:05am, 7:35am
 b) 3:05pm, 3:20pm
 c) r, p
 d) N, q
 e) 35, 41

27. Teacher to assess graphs

28. 15 combinations possible:
 A, O, M, B
 AO, AM, AB, OM, OB, MB
 AOM, AOB, AMB, OMB
 AOMB

29. Many solutions possible
 Teacher to assess work

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30. Many solutions possible
Teacher to assess work
31. Three solutions possible:
(2x20p) + (4x10p)
(3x20p) + 10p + (2x5p)
50p + 10p + (4x5p)
32. Many solutions possible
Example codes:
FED 654
FED 564
DEF 564
DEF 645
33. Burger order, top down:
Bun
Cheese
Tomato
Meat
Lettuce
Pickle
Bun
More than 1 solution possible
34. Day 1 → 1 snake → 1 in total
Day 2 → 2 snakes → 3
Day 3 → 3 snakes → 6
Day 4 → 4 snakes → 10
Day 5 → 5 snakes → 15
Day 6 → 6 snakes → 21
Day 7 → 7 snakes → 28
35. Pair combinations = 80
63 + 17 56 + 24
40 + 40 30 + 50
78 + 2 39 + 41
80 + 0 1 + 79
35 + 45 60 + 20

Maths Challenge Cards

36. 240 mins = 4 hours
half hour episodes
8 x 1/2 episodes = 4 hours
Denzel could tape 8 episodes
37. Ella may have had:
5 or 11 or 17 marbles
38.
$$\begin{array}{ccc} & 1 & 5 \\ 7 & 6 & \\ 2 & 5 & 3 \end{array} \quad \begin{array}{ccc} & & 5 \\ & 4 & 2 \\ 1 & 6 & 3 \end{array}$$
39. a) D2 & D3
b) Circle
c) Octagon
d) No
e) B2
40. Paul is 15 years old
Megan is 8 years old
Jess is 16 years old
Total of ages is 39 years
41. a) 21
b) 131
42. Many solutions possible
Teacher to assess drawings
43. Steve shot 22 baskets
Jayden shot 15 baskets
Score difference
7 baskets ⇒ 14 points
44. a) 57 , forty-three
b) fifty-seven , seventy-six
c) 25 , twenty-six
d) 47 , 36
e) 9 1/2 , 11

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45. Many solutions possible
Teacher to assess diagrams
46. Many solutions possible
Example orders include:
a) Sandwich + Cola + Cake
 $1.25 + .75 + .45 = \text{£}2.45$
Change from $\text{£}3 = 55\text{p}$
b) Rice + Juice + Fruit
 $.90 + 1 + .65 = \text{£}2.55$
Change from $\text{£}3 = 45\text{p}$
47. Answers as per card layout
- | | |
|----|---|
| 7 | 3 |
| 16 | 4 |
| 6 | 3 |
| 8 | 3 |
| 3 | 2 |
| 13 | 3 |
48. Gobstopper positions
purple orange brown
yellow blue red
49. a) 3 squares = 6 circles
b) 2 squares = 8 rectangles
ext) 5 circles = 10 rectangles
Teacher to assess diagrams
50. a) $+4 \Rightarrow 9$ & $-2 \Rightarrow 7$
b) $+4 \Rightarrow 8$ & $-7 \Rightarrow 1$
51. Teacher to assess graphs
5 letters $\rightarrow 3, 7, 8$
6 letters $\rightarrow 11, 12, 20$
7 letters $\rightarrow 15, 16$
8 letters 13, 14, 18, 19
9 letters $\rightarrow 17$
Seventeen has most letters

Maths Challenge Cards

52. $8\text{am} + 9\text{ hours} = 5\text{pm}$
53. a) March , December
b) Wednesday , Friday
c) 10 k 12 , m 14 o
pattern is actually in order
with digits and numbers
swapping: 1 b 3 d 5 f 7 h
d) 24, 18
e) 45, 36
54. Many solutions possible
Teacher to assess drawings
55. Hernando uses per day:
 $2\text{ times} \times 2\text{ grams} = 4\text{ grams}$
 $120\text{ grams} \div 4 \Rightarrow 30\text{ days}$
- 56.
- | | | | |
|--------------|--------------|--------------|--------------|
| 6 | 4 | 7 | 2 |
| 3 | 7 | 5 | 2 |
| 6 | 5 | 5 | 5 |
| 8 | 1 | 4 | 6 |
57. a) Mice locations:
A9 , B4 , A1, I1
b) Closest mouse is a draw
with A9, B4 and I1 all
8 moves away.
c) Many solutions possible
Teacher to assess work

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58. First week
 $5 \text{ days} \times 100\text{m} = 500\text{m}$
Second week
 $5 \text{ days} \times 150\text{m} = 750\text{m}$
a) $5 \text{ days} \times 2 = 10 \text{ laps more}$
b) $500\text{m} + 750\text{m} = 1250\text{m}$

59.

4	5	2
6	7	9
8	1	3

60. Many solutions possible
Teacher to assess work

61. a) June 15th \rightarrow July 1st
is 16 days
b) 1968 \rightarrow 2004
is 36 years

62. Pair combinations = 125
 $107 + 18$ $62 + 63$
 $100 + 25$ $99 + 26$
 $93 + 32$ $80 + 45$
 $55 + 70$ $124 + 1$
 $6 + 119$ $68 + 57$

63. Squares = 5
 $x1 \rightarrow 4$
 $x4 \rightarrow 1$
Rectangles = 4
 $\rightarrow 4$
Triangles = 16
 $x1 \rightarrow 8$
 $x2 \rightarrow 4$
 $x4 \rightarrow 4$

Maths Challenge Cards

64. Each class:
 $1/3 \times 30 = 10 \text{ girls per class}$
 $\Rightarrow 20 \text{ boys each class}$
School $\rightarrow 6 \text{ classes}$:
Boys $6 \times 20 = 120$
Girls $6 \times 10 = 60$
Overall = 180 students

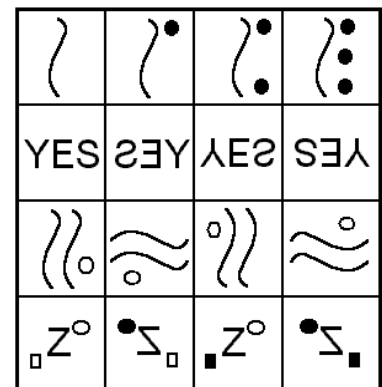
65. $40 + 5 \rightarrow 45 + 20 \rightarrow 65 - 5$
 $\rightarrow 60 + 1 \rightarrow 61 - 5 \rightarrow 56 +$
 $20 \rightarrow 76 - 10 \rightarrow 66 - 20$
 $\Rightarrow 46$

Teacher to assess work

66. a) 22 children in the class
b) January, March, May,
June, September,
November
c) First half of year with 12
d) 5 children

67. $12 + 4 + 2 = 18$
 $18 \div 3 = 6 \text{ books each pile}$

- 68.



UK Answers**Purple****Maths Challenge Cards**

69. Four solutions possible:
 2 rows x 18 seats each
 3 rows x 12 seats each
 4 rows x 9 seats each
 6 rows x 6 seats each
70. Central Station at 9:30am
 Midland Station at 9:44am
 → 7 minute stop
 → 15 minute journey
 Westland Station at 10:06am
 → 6 minute wait
 → 20 minute journey
 Inland Station at 10:32am
71. a) 37 b) 258
72. a) $165 + 210 + 75 = 450$ yds
 b) $195 + 90 + 150 = 435$ yds
73. $78 - 6 = 72$
 $72 \div 3 = 24$
 Big bus = 24 seats
 half Mini bus = 6
74. Students to create list or table
 8th shape → blue triangle
 14th shape → blue pentagon
 19th shape → red square
 27th shape → green square
- 75.
- | | <u>Lunch</u> | <u>Breakfast</u> |
|----------|--------------|------------------|
| Isabelle | 4 | 2 |
| Austin | 6 | 4 |
| Mark | 6 | 2 |
| Cathy | 2 | - |
| Sarah | 2 | 1 |
| Total | ⇒ | 29 slices |

76. 6 apples x 50p = £3.00
 3 bananas x 70p = £2.10
 2 "grapes" x £2 = £4.00
 1 orange x 60p = £0.60
 1 lemon x 40p = £0.40
- Total spent ⇒ £10.10
77. a) Total pets:
 $6 + 3 + 10 + 1 = 20$
 b) 7 more dogs than birds
 c) 5 more cats than fish
 d) 10 dogs + 6 cats =
 16 children with 4 leg pets
78. 12 pets altogether
 7 are 4 legged
 Hamsters = 3
 Dogs = 1
 Cats = 3
 5 have less than 4 legs
 Fish = 2
 Birds = 3
79. Beans = 9 plants
 3 rows x 3 plants
 Tomatoes = 8 plants
 2 rows x 4 plants
 Total beans:
 9 plants x 6 = 54 beans
 Total tomatoes:
 8 plants x 5 = 40 tomatoes



80. $1^{\text{st}} = \text{Elephant} \rightarrow 81$
 $5+12+5+16+8+1+14+20$
 $2^{\text{nd}} = \text{Horse} \rightarrow 65$
 $8+15+18+19+5$
 $3^{\text{rd}} = \text{Tiger} \rightarrow 59$
 $20+9+7+5+18$
 $4^{\text{th}} = \text{Chicken} \rightarrow 53$
 $3+8+9+3+11+5+14$
 $5^{\text{th}} = \text{Zebra} \rightarrow 52$
 $26+5+2+18+1$
- E81. 2 cubs x 5 spots = 10 spots
 3 fish x 3 spots = 9 spots
 Total \Rightarrow 19 spots
- E82. Across width:
 $28 + 7 + 28 + 7 = 70$ in
 Across depth:
 $14 + 7 + 14 + 7 = 42$ in
 Total ribbon:
 112 in + some for the bow
- E83. Pizza divided into 12 pieces
 Vince $\frac{1}{4} \rightarrow$ 3 pieces
 Carlos $\rightarrow 1 \frac{1}{2}$ pieces
 George \rightarrow 5 pieces
 Ari $\rightarrow 12 - 9 \frac{1}{2} \Rightarrow 2 \frac{1}{2}$ ps
- E84. 8 children \rightarrow 3 laps
 $3 \times 400\text{m} = 1,200\text{m}$ each
 $8 \times 1200\text{m} = 9,600\text{m}$ group
 5 children \rightarrow 4 laps
 $4 \times 400\text{m} = 1,600\text{m}$
 $5 \times 1600\text{m} = 8,000\text{m}$ group
 11 children \rightarrow 5 laps
 $5 \times 400\text{m} = 2,000\text{m}$
 $11 \times 2000\text{m} = 22,000\text{m}$ grp
 2 children \rightarrow 6 laps
 $6 \times 400\text{m} = 2,400\text{m}$
 $2 \times 2400\text{m} = 4,800\text{m}$ grp

- E84. continued
 a) Furthest two children:
 2400m each
 b) 1 mile = 1600m
 18 ran 1 mile or more
 c) Class total:
 $9600\text{m} + 8000\text{m} +$
 $22,000\text{m} + 4,800\text{m}$
 $\Rightarrow 44,400\text{m}$

- E85. Tram is quickest
 $7 + 18 = 25$ minutes
 Train
 $15 + 12 = 27$ minutes
 Bus
 $6 + 24 = 30$ minutes

- E86. Number of lines for digits:
 2 lines \rightarrow 1
 4 lines \rightarrow 4, 7
 5 lines \rightarrow 2, 3, 5
 6 lines \rightarrow 0, 6, 9
 7 lines \rightarrow 8

Numbers which use 6 lines:
 1 digit: 0 6 9
 2 digits: 14 17 41 71
 3 digits: 111

There may be some variation with calculator layout.

- E87. Two solutions each:
 Aidan scored 17
 $1 + 1 + 15$
 $1 + 8 + 8$
 Jacob scored 22
 $6 + 8 + 8$
 $1 + 6 + 15$



E88. Many solutions possible:
Examples include:

	<u>Bikes</u>	<u>Trikes</u>	<u>Train</u>
a)	2 → 4	4 → 12	1 → 4
b)	3 → 6	2 → 6	2 → 8
c)	5 → 10	2 → 6	1 → 4

Each totals to 20 wheels

E89. Sour worms:

$$12 \times 3 = 36 \rightarrow 3 \text{ packs}$$

Minties:

$$12 \times 4 = 48 \rightarrow 4 \text{ packs}$$

Gobstoppers

$$12 \times 2 = 24 \rightarrow 2 \text{ packs}$$

Chocolate bars

$$12 \times 1 = 12 \rightarrow 1 \text{ pack}$$

Caramel hearts

$$12 \times 5 = 60 \rightarrow 5 \text{ packs}$$

Total number of packs

$$3 + 4 + 2 + 1 + 5 = 15$$

E90. Teacher to assess tables

<u>Name</u>	<u>Brother</u>	<u>Sister</u>
Trinity	-	-
Leo	-	-
Elijah	-	2
Phoebe	-	2
Shaq.	1	1
Lily	1	1
Kate	2	-
Pedro	2	-
Sofia	1	2

Extensions 91 → 100

These are open-ended questions,
with no set solutions.

Please refer to introductory Sheet 3
for a thorough explanation.