

Mathletics

Series F & G

# Problem Solving



# Problem Solving Record Sheet

Name \_\_\_\_\_

<b>Draw a diagram</b>	
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<b>Look for patterns</b>	
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<b>Make a list</b>	
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# Answers

## Draw a diagram

### Worksheet 1

1 cheese + red pepper, cheese + mushrooms, cheese + celery;  
cheese/ham + red pepper, cheese/ham + mushrooms,  
cheese/ham + celery

2 teacher check; all weed, 2 do each of the 2nd jobs,  
1 does each of the 3rd jobs

### Worksheet 2

1 13; Fran, John, Bessie, Dan Jr, Amelia

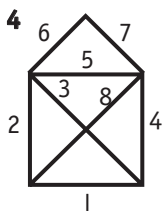
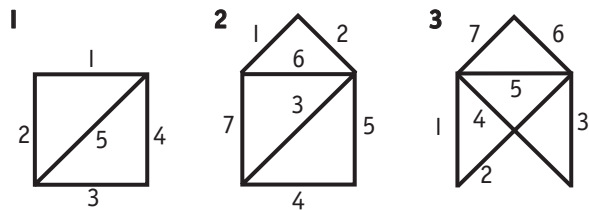
2 teacher check

### Worksheet 3

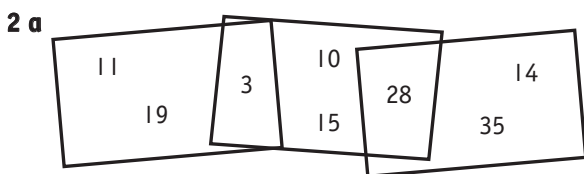
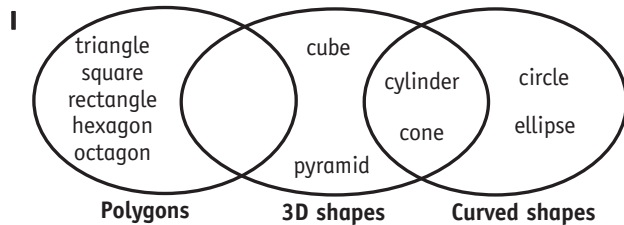
1 a teacher check timeline b false

2 a teacher check timeline b true

### Worksheet 4



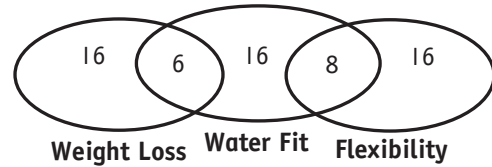
### Worksheet 5



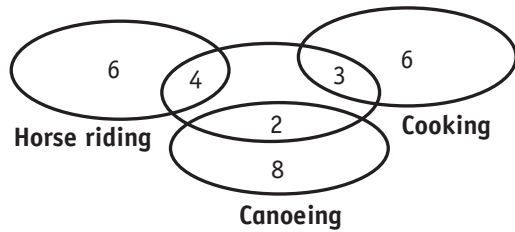
b 3, 28

### Worksheet 6

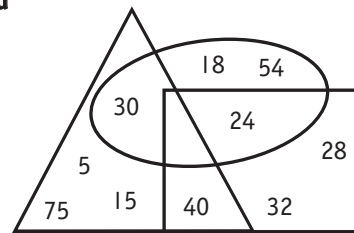
1 62



2 29



3 a



b 30 c 24

### Worksheet 7

teacher check all diagrams

1 false 2 true 3 false (same) 4 true

### Worksheet 8

1 4 oranges

2 0.9 m (90 cm)

3 £120

4  $\frac{1}{3}$  day = 8 hrs

## Look for patterns

### Worksheet 1

1 b

2 c

3 b

4 a

5 teacher check

**Worksheet 2**

- 1 a** 3, 6, 9, 12, 15, 18, 21, 24  
**b** 14 000, 1 400, 140, 14, 1.4, 0.14, 0.014, 0.0014  
**c** 3, 8, 18, 38, 78, 158, 318, 638  
**d** 4, 7, 13, 25, 49, 97, 193, 385  
**e** 2, 3, 5, 8, 13, 21, 34, 55
- 2** Sunday, Tuesday, Wednesday, Thursday, Saturday
- 3** January, February, March, April, September, October, November, December
- 4** 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37
- 5** 26, 27, 28, 30, 32, 33, 34, 35, 36, 38, 39
- 6** 12, 16, 20, 24, 28
- 7** 3, 5, 7
- 8** 22, 27, 32, 37, 42, 47, 52, 57
- 9** 3
- 10** 7

**Worksheet 3**

- 1 a** 13, 34, 82   **b** 49, 69, 97   **c** 46, 38.5, 26.5, 11.5

**2 a**

8	1	6
3	5	7
4	9	2

**b**

2	7	6
9	5	1
4	3	8

- 3 a**  $3 \times \text{input} + 2$ ; 11, 4, 5, 23   **b**  $4 \times \text{input} - 3$ ; 6, 29, 10  
**c**  $\text{input}^2 + 1$ ; 50, 8, 226, 20

**Worksheet 4**

- 1** 14
- 2** 45.2, 42.0, 40.4, 39.6, 39.2, 39, 38.9, 38.85
- 3** 84, 90, 95, 99, 102, 104, 103, 103
- 4** 403.5 m (400.5, 401, 401.5, 402, 402.5, 403, 403.5)

**Worksheet 5**

- 1 a** ABC 995, ABC 996, ABC 997, ABC 998, ABC 999, ABD 000  
**b** DJ 96 AA, DJ 97 AA, DJ 98 AA, DJ 99 AA  
**c** AY 9990, AY 9991, AY 9992, AY 9993, AY 9994, AY 9995, AY 9996, AY 9997, AY 9998, AY 9999, AZ 0000, AZ 0001  
**d** TZ 998, TZ 999, UA 000, UA 001, UA 002  
**e** 36 JK 49, 36 JL 49, 36 JM 49, 36 JN 49, 36 JO 49
- 2 a** D6, D8, E0   **b** Q8, R0, R2   **c** R9, S1, S3  
**d** J2, J4, J6   **e** Xo, X2, X4   **f** Y7, Y9, Z1
- 3 a** add consecutive numbers  
**b** add consecutive odd numbers  
**c** consecutive numbers cubed

**Worksheet 6**

- 1** 15, 31, 63, 127, 255, 511, 1023

- 2** 44, 35, 27, 20, 14, 9, 5, 2, 0 (week 10)
- 3** -£5, -£4, -£5, -£4 etc.
- 4 a** 1, 0, repeated   **b** 1, 3, 3, 3, 3 repeated   **c** 1, 3, 2, 0, 1, 3, 2, 0, repeated   **d** 1, 3, 1, 3, repeated   **e** 1, 3, 0, 1, 3, 0, 1, 3, 0, repeated   **f** 1, 3, 7, 7, 7, 7, 7, 7, 7, repeated

**Worksheet 7**

- 1 a** 8, 13, 17   **b** 9, 16, 31   **c** 14, 87, 235   **d** 18, 32  
**e**  $N \times 3 + 2$ ; 7, 10, 16, 46   **f**  $N \div 2 + 1$ ; 1, 4, 8  
**g**  $N - 0.5$ ; 5.5, 10, 15.5   **h**  $N \times 9$ ; 1, 47, 99  
**i**  $N \times 2 - 2$ ; 9, 14, 30   **j**  $N$  + consecutive odd numbers; 10, 12, 21
- 2 a**  $N^2 - 1$    **b**  $N \div 2$    **c**  $N^3$    **d**  $N \div 4$    **e**  $N \times 3 + 1$

**Worksheet 8**

- 1** £150, £200, £250, £300, £350, £450, £600
- 2 a** £4 700, £4 600, £4 400, £4 000, £3 200, £1 600, nil  
**b** Nov
- 3 a** £1405, £1310, £1215, £1120, £1025, £930, £740, £455  
**b** £75
- 4** £692

**Make a list**

**Worksheet 1**

- 1** 202, 212, 222, 232, 242, 252, 262, 272, 282, 292
- 2** 9 009, 9 119, 9 229, 9 339, 9 449, 9 559, 9 669, 9 779, 9 889, 9 999
- 3** level, madam
- 4** 161, 262, 363, 464, 656, 666, 767, 868, 969
- 5**  $20 - 1 - 02$ ,  $20 - 2 - 02$ ,  $20 - 3 - 02$ ,  $20 - 4 - 02$ ,  $20 - 5 - 02$ ,  $20 - 6 - 02$ ,  $20 - 7 - 02$ ,  $20 - 8 - 02$ ,  $20 - 9 - 02$ ,  $20 - 11 - 02$
- 6** 404, 414, 424, 434, 454, 464, 474, 484, 494,
- 7**  $121 + 464$ ,  $131 + 454$ ,  $141 + 444$ ,  $151 + 434$ ,  $161 + 424$ ,  $171 + 414$ ,  $181 + 404$ ,  $212 + 373$ ,  $222 + 363$ ,  $232 + 353$ ,  $242 + 343$ ,  $252 + 333$ ,  $262 + 323$ ,  $272 + 313$ ,  $282 + 303$
- 8**  $999 - 272$ ,  $989 - 262$ ,  $979 - 252$ ,  $969 - 242$ ,  $959 - 232$ ,  $949 - 222$ ,  $939 - 212$ ,  $929 - 202$ ,  $898 - 171$ ,  $888 - 161$ ,  $878 - 151$ ,  $868 - 141$ ,  $858 - 131$ ,  $848 - 121$ ,  $838 - 111$ ,  $828 - 101$

**Worksheet 2**

- 1** 5 years  
**2** 8 years  
**3** 4 years

**Worksheet 3**

- 1** £5, 50p; £5, 20p, 20p, 10p; £2, £2, £1, 50p; £2, £2, £1, 20p, 20p, 10p, £2, £1, £1, 50p, 50p, 20p, 20p, 10p.  
**2** £2, £2, 50p; £2, £1, £1, 50p; £1, £1, £1, £1, 50p; £1, £1, £1, 3 × 50p; £1, £1, 5 × 50p; £1, 7 × 50p; 9 × 50p.  
**3** 5 weeks (£19 and £15)

**Worksheet 4**

- 1** 60  
**2** 4 combinations; 3 red, 2 blue with – 1 y, 4 p; 2 y, 3 p; 3 y, 2 p; 4 y, 1 p  
**3** 12

**Worksheet 5**

- 1** 6; **2** 6

**3** **Player 1**    **Player 2**    **Umpire**

Guy	Fabia	Mario
Guy	Hong	Fabia
Guy	Mario	Hong
Fabia	Hong	Guy
Fabia	Mario	Hong
Hong	Mario	Guy

(other combinations are possible)

**Worksheet 6**

- 1** teacher check  
**2** teacher check

**Worksheet 7**

- 1** **a** no **b** 18  
**2** 10

**Worksheet 8**

- 1** 18  
**2** I will be 17, mother 41, father 43  
**3** teacher check

**Work backwards**

**Worksheet 1**

- 1** 2  
**2** 72  
**3** 20  
**4** 48  
**5** 25

**Worksheet 2**

- 1** £600  
**2** £650  
**3** £1 300  
**4** £10

**Worksheet 3**

- 1** 12:40 pm; teacher check  
**2** 1:35 pm; teacher check  
**3 a** 1:50 pm    **b** 15 min

**Worksheet 4**

- 1** top £29; skirt £35; belt £15; sandals £49; total £128  
**2** boots £65; top £45; shorts £35; socks £16; total £161  
**3** books £90; CDs £75; cards £12; toys £60; calendars £36; £300

**Worksheet 5**

- 1 a** Angels 20; Bizzies 10    **b** teacher check  
**2** ( $\frac{3}{12} = 15$  hours)    **a** Val 20; Joe 15; Fred 10  
**b** teacher check  
**3** (15% = £450) 3J £600; 3S £900

**Worksheet 6**

- 1** **a** + 3 + 5 + 5 + 2 = 99; 99 – 2 – 5 – 5 – 3 = 84; 15  
**2** **a** + 2 + 2 + 4 + 1 – 1 = 90; 90 + 1 – 1 – 4 – 2 – 2 = 82; 82  
**3 a** Voombahs 81 + 84 + 82 + 83 = 328;  
 Jetskis 80 + 82 + 85 + 87 = 334  
**b** Vs 83; Js 87

**Worksheet 7**

- 1 a** Shanghai £1 750; Wellington £875  
**b** teacher check  
**2 a** 38 hr    **b** 171 km    **c** teacher check

**Worksheet 8**

- 1 a** 185 km    **b** £212.35  
**2** 3  
**3 a** 18 min    **b** 14 min    **c** 29 min

**Trial and error**

**Worksheet 1**

- 1** 1  $\frac{7}{8}$  cups pies; 2  $\frac{1}{8}$  cups cake  
**2** 4 adults  $\frac{1}{2}$  pie each; 4 children  $\frac{1}{4}$  pie each  
**3** 3 peaches, 6 kiwi fruit, 2 apricots, 12 strawberries, 2 bananas

**Worksheet 2**

- 1 BB 3 × 9, 4 × 8, 2 × 7; JJ 3 × 9, 4 × 8, 3 × 6;  
FF 4 × 9, 5 × 7, 1 × 6
- 2 FF 65, JJ 75, BB 85
- 3 BB 31 + 37, FF 13 × 5, JJ 83 – 15
- 4 Jim Jets

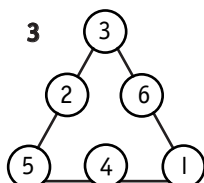
**Worksheet 3**

1

8	1	6
3	5	7
4	9	2

2

16	2	3	13
12	6	7	9
5	11	10	8
1	15	14	4



- 4 teacher check  
(390 g on each side)

**Worksheet 4**

teacher check

**Worksheet 5**

- 1 Sam 80, Jack 45, Daniel 20, Henry 145
- 2 this week 124, last week 78, week before that 148
- 3 108, 160, 192

**Worksheet 6**

- 1 7 weeks
- 2 4 days
- 3 teacher check
- 4 K 89, J 88, T 81, S 87, F 85

**Worksheet 7**

- 1 12
- 2 7
- 3 17
- 4 teacher check

**Worksheet 8**

- 1 A 9, B 4, C 11, D 5
- 2 A 5, B 8, C 12, D 2, E 10, F 13

**Logical reasoning**

**Worksheet 1**

- 1 a regular quadrilaterals b irregular quadrilaterals c square
- 2 a divisible by 3 b divisible by 4 c 72
- 3 a square numbers b divisible by 8 c 256
- 4 a square numbers b triangular numbers c 36

**Worksheet 2**

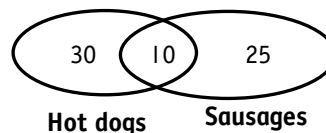
- 1 37 – others all even
- 2 circle – others have straight sides
- 3 35 – others are triangular numbers
- 4 35 – others are multiples of 3
- 5 8 – others are square numbers.
- 6 67 – others are composite numbers
- 7  $\frac{2}{5}$  – others can be expressed as twelfths
- 8 10% – others are fifths
- 9 125 – others are divisible by 4
- 10 d – others have 2 axes of symmetry

**Worksheet 3**

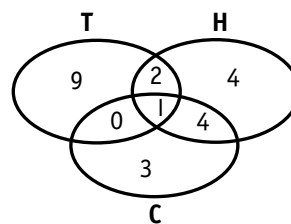
- 1 a T b F c T d T e F f F g T h T
- 2 a T b T c F d T e T f F g T h T
- 3 a T b T c T d F e T f F g F h T

**Worksheet 4**

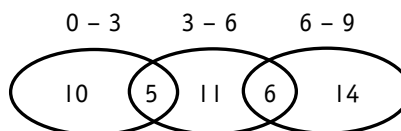
1 25



2 a 3 b 23



3 a 11 b 46



**Worksheet 5**

1 Blue

	Blue	Red	Green	Yellow
Ned	x	x	x	✓
Peter	x	x	✓	x
Barry	✓	x	x	x
Bernie	x	✓	x	x

2 Spud

	S	M	T	9	10	11
Jake	✓	x	x	x	x	✓
Spud	x	✓	x	x	✓	x
Tito	x	x	✓	✓	x	x

3 Goalie

Person	Position	Award
Fonzie	centre	M.I.
Jantzer	forward	B.G.
Danzer	goalie	B.

4 a Joe                      b Serge

Person	Food	Sport
Davy	pies	soccer
Joe	chips	cricket
Serge	fruit	rugby

Worksheet 6

- 1 a AAAAAA
- b AAAAAAAAAA
- c AAAAAAAAAA
- d AAAAAAAAAAAAAA
- e AAAAAAAAAA
- 2 a GGGGGG
- b GGGGG
- c GGGGGGGGGGGG

Worksheet 7

- 1 8 (RRB – B; R – BRB; – RBRB; BR – RB; BRBR – ; BRB – R; B – BRR; BB – RR)
- 2 teacher check

Worksheet 8

- 1 2 bananas
- 2 teacher check
- 3 Maggie

	hat	dress	shoes	bag
Mag	x	x	✓	x
Man	x	x	x	✓
Mim	x	✓	x	x
Mol	✓	x	x	x

Open-ended problem solving

Worksheet 1  
teacher check

Worksheet 2  
teacher check

Worksheet 3  
teacher check

Worksheet 4  
Possible answers

- 1 72: factors of 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 6 dozen, 7 tens and 2 etc.
- 2 84: 7 dozen, factors of 2, 3, 4, 6, 8, 12, 16, 21, 42, 8 tens and 4, 3 plus 9 squared, etc.
- 3 96: 8 dozen, Factors of 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 4 less than 100, 10? – 2? etc.
- 4 42: double 21, 3 times 14, 7 times 6, etc.

Worksheet 5  
teacher check

Worksheet 6  
teacher check

Worksheet 7  
teacher check

Worksheet 8  
teacher check