

WA6MNAMN1

Modelling with number

Core + Challenge

Problem Solving with Number — Marking Key

I can pick out the information I need, show a problem with a model or number sentence, and justify my answer.

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

Marks summary

A Warm up: 16 B Practise: 22 C Think it through: 10 D Challenge: 9 **Total: 57**

Gold shading in this key shows what the child should have shaded or drawn. Accept any correct arrangement unless the question fixes it.

A

Warm up answers

/ 16 marks

Q	Answer	Model answer / notes	Marks
1	$\frac{5}{8}$	 $2 + 3 = 5$ parts of 8.	1
2	$\frac{9}{10}$	$4 + 5 = 9$ parts of 10.	1
3	$\frac{3}{6} = \frac{1}{2}$	$5 - 2 = 3$ parts of 6. Accept $\frac{1}{2}$.	1
4	$\frac{7}{5} = 1\frac{2}{5}$	 $3 + 4 = 7$ parts of 5. 5 fifths make 1 whole, and 2 fifths are left.	1
5	75	$120 - 45 = 75$.	1
6	24	$96 \div 4 = 24$.	1
7	55	Tom has 17 more than Mia: $38 + 17 = 55$.	1
8	60	$5 \times 12 = 60$.	1
9	43	$6 \times 8 - 5 = 48 - 5 = 43$.	1
10	64	$72 \div 9 = 8$ in a bag. $72 - 8 = 64$.	1
11	\$29	$50 - (17 + 4) = 50 - 21 = 29$.	1
12	$\frac{5}{8}$	3 eighths + 2 eighths = 5 eighths.	1
13	7	$(54 - 12) \div 6 = 42 \div 6 = 7$.	1
14	$\frac{3}{10}$	10 tenths – 7 tenths = 3 tenths.	1
15	41	$3 \times 12 + 5 = 36 + 5 = 41$.	1

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Q	Answer	Model answer / notes	Marks
16	8	$(28 + 4) \div 4 = 32 \div 4 = 8.$	1

B Practise *answers and working*

/ 22 marks

Q	Answer	Working / sample response	Marks
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1 11 cupcakes

96		
67	18	11

$4 \times 24 = 96$ cupcakes.
 $96 - 67 - 18 = 11$ (or $96 - (67 + 18) = 96 - 85 = 11$).
1 mark: 96 (bar labelled).
1 mark: 11.

2

2 b) \$1,500 c) \$25 each

a) Not needed: 6 teachers (they are free) and 8:45 am.
b) $60 \times \$18 + \$420 = \$1,080 + \$420 = \$1,500.$
c) $\$1,500 \div 60 = \$25.$
1 mark: lists the teachers and the time.
1 mark: \$1,500.
1 mark: \$25.

3

3 Coles, by \$3

Shop	Packs	Cost
Coles	2	\$18
Woolies	3	\$21

Coles: $12 \div 6 = 2$ packs, $2 \times \$9 = \$18.$
Woolies: $12 \div 4 = 3$ packs, $3 \times \$7 = \$21.$ Coles is \$3 cheaper.
1 mark: table correct (\$18 and \$21).
1 mark: Coles, \$3 cheaper.

2

4 $\frac{3}{10}$; \$180

sizzle	raffle	cake \$180
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$\frac{3}{10} + \frac{4}{10} = \frac{7}{10}$, so the cake stall raised $\frac{10}{10} - \frac{7}{10} = \frac{3}{10}.$
 $\frac{1}{10}$ of \$600 = \$60, so $\frac{3}{10} = 3 \times \$60 = \$180.$
1 mark: strip shaded / labelled.
1 mark: $\frac{3}{10}$.
1 mark: \$180.

3

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Q	Answer	Working / sample response	Marks																									
5	Murray (33 points); no	<table><tr><th>Faction</th><th>1st</th><th>2nd</th><th>3rd</th><th>Points</th></tr><tr><td>Swan</td><td>4</td><td>3</td><td>2</td><td>31</td></tr><tr><td>Avon</td><td>3</td><td>4</td><td>3</td><td>30</td></tr><tr><td>Canning</td><td>5</td><td>1</td><td>4</td><td>32</td></tr><tr><td>Murray</td><td>2</td><td>6</td><td>5</td><td>33</td></tr></table> Swan: $4 \times 5 + 3 \times 3 + 2 = 31$. Avon: $3 \times 5 + 4 \times 3 + 3 = 30$. Canning: $5 \times 5 + 1 \times 3 + 4 = 32$. Murray: $2 \times 5 + 6 \times 3 + 5 = 33$. Murray wins with 33, but Canning had the most 1st places (5). 2 marks: all four totals (1 mark for two or three). 1 mark: Murray, and notes it is not the faction with the most 1st places.	Faction	1st	2nd	3rd	Points	Swan	4	3	2	31	Avon	3	4	3	30	Canning	5	1	4	32	Murray	2	6	5	33	3
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6	Mo; 500 m	<table><tr><th>Leah</th><th>Jai</th><th>Mo 500 m</th></tr></table> Leah and Jai run $\frac{3}{8}$, so Mo runs $\frac{5}{8}$. That is the most. $\frac{1}{8}$ of 800 m = 100 m, so $\frac{5}{8} = 500$ m. 1 mark: Mo ($\frac{5}{8}$). 1 mark: 500 m.	Leah	Jai	Mo 500 m	2																						
Leah	Jai	Mo 500 m																										
7	$125 \times 2 + 40 \times 3 - 95 = \$275$	$125 \times 2 = 250$ and $40 \times 3 = 120$. $250 + 120 - 95 = \\$275$. 1 mark: a correct single number sentence. 1 mark: \$370 in sales. 1 mark: \$275.	3																									
8	7 minibuses	$154 + 12 = 166$ people. $166 \div 24 = 6 \text{ r } 22$. 6 minibuses hold 144, so 22 people still need a seat: 7 minibuses. 1 mark: $166 \div 24$ (or 6 r 22). 1 mark: 7, with the reason.	2																									
9	No, \$16 short	Each lunch costs $6 + 2 = \\$8$. $27 \times 8 = \\$216$. \$216 is more than \$200, so it is not enough. She needs \$16 more. 1 mark: \$216. 1 mark: not enough, \$16 short.	2																									

C

Think it through *sample answers and criteria*

/ 10 marks

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Q	Answer	Working / sample response	Marks
1	No, it is $\frac{7}{5} = 1\frac{2}{5}$	The parts are fifths. 3 fifths + 4 fifths = 7 fifths. Lily added the denominators too, but the size of the parts does not change. 5 fifths make 1 whole, so $\frac{7}{5} = 1\frac{2}{5}$, which is more than 1. <i>1 mark: No, $\frac{7}{5}$ (or $1\frac{2}{5}$).</i> <i>1 mark: explains that only the numerators are added, and that the answer is more than 1.</i>	2
2	False, 4 buses	3 buses only seat 90 students. The remainder 10 is 10 students who still need a seat, so 4 buses are needed. <i>1 mark: False.</i> <i>1 mark: explains the remainder means 10 more students need a bus.</i>	2
3	Sometimes	Always Sometimes Never $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$, which is less than 1. $\frac{3}{5} + \frac{4}{5} = \frac{7}{5}$, which is more than 1. So only sometimes. <i>1 mark: Sometimes.</i> <i>1 mark: one example each way.</i>	2
4	B; own story = 55	A, C and D all give 43 (8×5 is the same as 5×8, and $3 + 5 \times 8 = 43$). B is $5 \times 8 - 3 = 37$ because people leave. Story for $5 \times (8 + 3) = 55$, e.g. 5 bags each hold 8 red apples and 3 green apples. How many apples? The 3 must be in every group. <i>1 mark: B with a reason.</i> <i>1 mark: a story where the + 3 is inside each of the 5 groups.</i>	2
5	Deal B (saves \$12)	Deal A: 9 pizzas = 3 lots of 3, so $3 \times \\$30 = \\$90$. Deal B: pay for 2 in every 3, so pay for 6 pizzas: $6 \times \\$13 = \\$78$. Deal B is \$12 cheaper. <i>1 mark: both costs (\$90 and \$78).</i> <i>1 mark: Deal B with the saving or clear comparison.</i>	2

D

Challenge solutions and criteria

/ 9 marks

Q	Answer	Working / sample response	Marks
1	\$30	Before the rides she had $2 \times \\$11 = \\$22$ (half was spent, half was left). Before the show bag she had $\\$22 + \\$8 = \\$30$. Check: $30 - 8 = 22$, half of 22 = 11. <i>1 mark: \$22.</i> <i>1 mark: \$30.</i> <i>1 mark: working backwards shown (or a check).</i>	3

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Q	Answer	Working / sample response	Marks
2	1 adult + 6 children, or 4 adults + 1 child	Try each number of adults: 1 adult leaves \$18 = 6 children. 2 adults leave \$13 (not a multiple of 3). 3 adults leave \$8 (no). 4 adults leave \$3 = 1 child. 5 adults cost \$25 (too much). So there are exactly two possibilities. <i>1 mark: 1 adult and 6 children.</i> <i>1 mark: 4 adults and 1 child.</i> <i>1 mark: shows a system that checks every case.</i>	3
3	a) $\frac{3}{9} = \\$300$ b) 4 days	 a) $\frac{2}{9} + \frac{4}{9} = \frac{6}{9}$, so $\frac{3}{9}$ is still needed. $\frac{1}{9}$ of \$900 = \$100, so $\frac{3}{9} = \\$300$. b) $\\$300 \div \\$75 = 4$ days. <i>1 mark: $\frac{3}{9}$ (accept $\frac{1}{3}$).</i> <i>1 mark: \$300.</i> <i>1 mark: 4 days.</i>	3