

Assessing pupils' progress in mathematics at Key Stage 3

Year 8 assesment package
Number

Examples of pupils' work



Using 1-2-5-10 sheet 1

Level 3

Use the 1-2-5-10 tables to work out the answers.

Year 8

Number

LESSON 1: 1-2-5-10

16 × 13

lots of 13	
1	13
2	26
5	65
10	130

$$130 + 65 + 13$$

$$6 \times 208$$

13 × 16

lots of 16	
1	16
2	32
5	80
10	160

$$160 + 32 + 16$$

$$208$$

17 × 14

lots of 14	
1	14
2	28
5	70
10	140

$$140 + 70 + 14$$

$$224$$

17 × 14

lots of 17	
1	17
2	34
5	85
10	170

32 × 11

lots of	
1	
2	
5	
10	

16 × 400

lots of	
1	
2	
5	
10	

Using 1-2-5-10 sheet 1

Level 4

Use the 1-2-5-10 tables to work out the answers.

16×13

lots of 13	
1	13
2	26
5	65
10	130

$130 + 65 + 13 = 208$

13×16

lots of 16	
1	16
2	32
5	80
10	160

$160 + 32 + 16 = 208$

17×14

lots of 14	
1	14
2	28
5	70
10	140

$140 + 70 + 28 = 238$

17×14

lots of 17	
1	17
2	34
5	85
10	170

$170 + 85 + 17 + 17 = 291$

32×11

lots of 11	
1	11
2	22
5	55
10	110

$110 + 110 + 110 + 22 = 352$

16×400

lots of 400	
1	
2	
5	
10	

Using 1-2-5-10 sheet 2

Level 3

Use the 1-2-5-10 tables to work out the answers.

16×13

lots of 13	
1	13
2	26
5	65
10	130

13×16

lots of 16	
1	16
2	32
5	80
10	160

17×14

lots of 14	
1	14
2	28
5	70
10	140

32×11

lots of 11	
1	11
2	22
5	55
10	110

16×400

lots of 400	
1	400
2	800
5	2000
10	4000

16% of 400

16 %	of 400
1%	4
2%	8
5%	20
10%	40

Using 1-2-5-10 sheet 2
Level 4

Use the 1-2-5-10 tables to work out the answers.

<p>16 × 13</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr><th colspan="2">lots of 13</th></tr> <tr><td>1</td><td>13</td></tr> <tr><td>2</td><td>26</td></tr> <tr><td>5</td><td>65</td></tr> <tr><td>10</td><td>130</td></tr> </table> <p>130 65 + 13 ----- 208</p> <p>130 + 65 + 13 = 208</p>	lots of 13		1	13	2	26	5	65	10	130	<p>13 × 16</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr><th colspan="2">lots of 16</th></tr> <tr><td>1</td><td>16</td></tr> <tr><td>2</td><td>32</td></tr> <tr><td>5</td><td>80</td></tr> <tr><td>10</td><td>160</td></tr> </table> <p>160 32 + 16 ----- 208</p> <p>160 + 32 + 16 = 208</p>	lots of 16		1	16	2	32	5	80	10	160
lots of 13																					
1	13																				
2	26																				
5	65																				
10	130																				
lots of 16																					
1	16																				
2	32																				
5	80																				
10	160																				
<p>17 × 14</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr><th colspan="2">lots of 14</th></tr> <tr><td>1</td><td>14</td></tr> <tr><td>2</td><td>28</td></tr> <tr><td>5</td><td>70</td></tr> <tr><td>10</td><td>140</td></tr> </table> <p>140 78 + 28 ----- 246</p> <p>140 + 70 + 28 = 246</p>	lots of 14		1	14	2	28	5	70	10	140	<p>32 × 11</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr><th colspan="2">lots of 11</th></tr> <tr><td>1</td><td>11</td></tr> <tr><td>2</td><td>22</td></tr> <tr><td>5</td><td>55</td></tr> <tr><td>10</td><td>110</td></tr> </table> <p>110 110 110 + 22 ----- 352</p> <p>110 + 110 + 110 + 22 = 352</p>	lots of 11		1	11	2	22	5	55	10	110
lots of 14																					
1	14																				
2	28																				
5	70																				
10	140																				
lots of 11																					
1	11																				
2	22																				
5	55																				
10	110																				
<p>16 × 400</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr><th colspan="2">lots of 400</th></tr> <tr><td>1</td><td>400</td></tr> <tr><td>2</td><td>800</td></tr> <tr><td>5</td><td>2000</td></tr> <tr><td>10</td><td>4000</td></tr> </table> <p>4000 2000 400 ----- 6400</p> <p>4000 + 2000 + 400 = 6400</p>	lots of 400		1	400	2	800	5	2000	10	4000	<p>16% of 400</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr><th colspan="2">of 400</th></tr> <tr><td>1%</td><td></td></tr> <tr><td>2%</td><td></td></tr> <tr><td>5%</td><td></td></tr> <tr><td>10%</td><td></td></tr> </table>	of 400		1%		2%		5%		10%	
lots of 400																					
1	400																				
2	800																				
5	2000																				
10	4000																				
of 400																					
1%																					
2%																					
5%																					
10%																					

Using 1-2-5-10 sheet 2
Level 5

Use the 1-2-5-10 tables to work out the answers.

<p>16 × 13</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr><th colspan="2">lots of 13</th></tr> <tr><td>1</td><td>13</td></tr> <tr><td>2</td><td>26</td></tr> <tr><td>5</td><td>65</td></tr> <tr><td>10</td><td>130</td></tr> </table> <p>130 65 + 13 ----- 208</p> <p>130 + 65 + 13 = 208</p>	lots of 13		1	13	2	26	5	65	10	130	<p>13 × 16</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr><th colspan="2">lots of 16</th></tr> <tr><td>1</td><td>16</td></tr> <tr><td>2</td><td>32</td></tr> <tr><td>5</td><td>80</td></tr> <tr><td>10</td><td>160</td></tr> </table> <p>160 32 + 16 ----- 208</p> <p>160 + 32 + 16 = 208</p>	lots of 16		1	16	2	32	5	80	10	160
lots of 13																					
1	13																				
2	26																				
5	65																				
10	130																				
lots of 16																					
1	16																				
2	32																				
5	80																				
10	160																				
<p>17 × 14</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr><th colspan="2">lots of 14</th></tr> <tr><td>1</td><td>14</td></tr> <tr><td>2</td><td>28</td></tr> <tr><td>5</td><td>70</td></tr> <tr><td>10</td><td>140</td></tr> </table> <p>140 78 + 28 ----- 246</p> <p>140 + 70 + 28 = 246</p>	lots of 14		1	14	2	28	5	70	10	140	<p>32 × 11</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr><th colspan="2">lots of 11</th></tr> <tr><td>1</td><td>11</td></tr> <tr><td>2</td><td>22</td></tr> <tr><td>5</td><td>55</td></tr> <tr><td>10</td><td>110</td></tr> </table> <p>110 110 110 + 22 ----- 352</p> <p>110 + 110 + 110 + 22 = 352</p>	lots of 11		1	11	2	22	5	55	10	110
lots of 14																					
1	14																				
2	28																				
5	70																				
10	140																				
lots of 11																					
1	11																				
2	22																				
5	55																				
10	110																				
<p>16 × 400</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr><th colspan="2">lots of 400</th></tr> <tr><td>1</td><td>400</td></tr> <tr><td>2</td><td>800</td></tr> <tr><td>5</td><td>2000</td></tr> <tr><td>10</td><td>4000</td></tr> </table> <p>4000 2000 400 ----- 6400</p> <p>4000 + 2000 + 400 = 6400</p>	lots of 400		1	400	2	800	5	2000	10	4000	<p>16% of 400</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr><th colspan="2">of 400</th></tr> <tr><td>1%</td><td></td></tr> <tr><td>2%</td><td></td></tr> <tr><td>5%</td><td></td></tr> <tr><td>10%</td><td></td></tr> </table>	of 400		1%		2%		5%		10%	
lots of 400																					
1	400																				
2	800																				
5	2000																				
10	4000																				
of 400																					
1%																					
2%																					
5%																					
10%																					

Using 1-2-5-10 sheet 2
Level 5

Use the 1-2-5-10 tables to work out the answers.

$16 \times 13 = 208$

lots of 13	
1	13
2	26
5	65
10	130

Handwritten: 16 x 13 = 208. Diagram shows 16 groups of 13, with 10 groups of 10 and 6 groups of 3.

$13 \times 16 = 208$

lots of 16	
1	16
2	32
5	80
10	160

Handwritten: 13 x 16 = 208. Diagram shows 13 groups of 16, with 10 groups of 10 and 3 groups of 6.

$17 \times 14 = 238$

lots of 14	
1	14
2	28
5	70
10	140

Handwritten: 17 x 14 = 238. Diagram shows 17 groups of 14, with 10 groups of 10 and 7 groups of 4.

$32 \times 11 = 352$

lots of 32	
1	32
2	64
5	160
10	320

Handwritten: 32 x 11 = 352. Diagram shows 32 groups of 11, with 10 groups of 10 and 22 groups of 2.

$16 \times 400 = 6400$

lots of 400	
1	400
2	800
5	2000
10	4000

Handwritten: 16 x 400 = 6400. Diagram shows 16 groups of 400, with 10 groups of 10 and 6 groups of 4.

$16\% \text{ of } 400 = 64\%$

of 400	
1%	4
2%	8
5%	20
10%	40

Handwritten: 16% of 400 = 64%. Diagram shows 16% of 400, with 10% of 40 and 6% of 4.

Using 1-2-5-10 sheet 3
Level 5

Use the 1-2-5-10 tables to work out the answers.

$17 \times 14 = 238$

lots of 14	
1	14
2	28
5	70
10	140

Handwritten: 17 x 14 = 238. Diagram shows 17 groups of 14, with 10 groups of 10 and 7 groups of 4.

$32 \times 11 = 352$

lots of 32	
1	32
2	64
5	160
10	320

Handwritten: 32 x 11 = 352. Diagram shows 32 groups of 11, with 10 groups of 10 and 22 groups of 2.

$16 \times 400 = 6400$

lots of 400	
1	400
2	800
5	2000
10	4000

Handwritten: 16 x 400 = 6400. Diagram shows 16 groups of 400, with 10 groups of 10 and 6 groups of 4.

$16\% \text{ of } 400 = 64\%$

of 400	
1%	4
2%	8
5%	20
10%	40

Handwritten: 16% of 400 = 64%. Diagram shows 16% of 400, with 10% of 40 and 6% of 4.

$14\% \text{ of } 30 = 4.2$

of 30	
1%	0.3
2%	0.6
5%	1.5
10%	3.0

Handwritten: 14% of 30 = 4.2. Diagram shows 14% of 30, with 10% of 3 and 4% of 0.3.

$27.5\% \text{ of } 92 = 25.3$

of 92	
1%	0.92
2%	1.84
5%	4.6
10%	9.2

Handwritten: 27.5% of 92 = 25.3. Diagram shows 27.5% of 92, with 10% of 9.2 and 17.5% of 0.92.

Using 1-2-5-10 sheet 3
Level 5

Use the 1-2-5-10 tables to work out the answers.

<p>$17 \times 14 = 238$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2">lots of 14</th></tr> <tr><td>1</td><td></td></tr> <tr><td>2</td><td>28</td></tr> <tr><td>5</td><td>70</td></tr> <tr><td>10</td><td>140</td></tr> </table> $\begin{array}{r} 140 \\ 70 \\ \hline 238 \end{array}$	lots of 14		1		2	28	5	70	10	140	<p>$32 \times 11 = 352$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2">lots of 32</th></tr> <tr><td>1</td><td>32</td></tr> <tr><td>2</td><td></td></tr> <tr><td>5</td><td></td></tr> <tr><td>10</td><td>320</td></tr> </table> $\begin{array}{r} 320 \\ 32 \\ \hline 352 \end{array}$	lots of 32		1	32	2		5		10	320
lots of 14																					
1																					
2	28																				
5	70																				
10	140																				
lots of 32																					
1	32																				
2																					
5																					
10	320																				
<p>$16 \times 400 = 6400$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2">lots of 400</th></tr> <tr><td>1</td><td>400</td></tr> <tr><td>2</td><td></td></tr> <tr><td>5</td><td>2000</td></tr> <tr><td>10</td><td>4000</td></tr> </table> $\begin{array}{r} 4000 \\ 2000 \\ 400 \\ \hline 6400 \end{array}$	lots of 400		1	400	2		5	2000	10	4000	<p>$16\% \text{ of } 400 = 64$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2">of 400</th></tr> <tr><td>1%</td><td>4</td></tr> <tr><td>2%</td><td></td></tr> <tr><td>5%</td><td>20</td></tr> <tr><td>10%</td><td>40</td></tr> </table> $\begin{array}{r} 40 \\ 20 \\ 4 \\ \hline 64 \end{array}$	of 400		1%	4	2%		5%	20	10%	40
lots of 400																					
1	400																				
2																					
5	2000																				
10	4000																				
of 400																					
1%	4																				
2%																					
5%	20																				
10%	40																				
<p>$14\% \text{ of } 30 = 0.9$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2">of 30</th></tr> <tr><td>✓ 1%</td><td>0.3</td></tr> <tr><td>2%</td><td></td></tr> <tr><td>5%</td><td>1.5</td></tr> <tr><td>10%</td><td>3</td></tr> </table> $\begin{array}{r} 1.5 \\ 3 \\ \hline 0.9 \end{array}$	of 30		✓ 1%	0.3	2%		5%	1.5	10%	3	<p>$27.5\% \text{ of } 92 = 25.40$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2">of 92</th></tr> <tr><td>$\frac{1}{2}$ - 1%</td><td>0.92</td></tr> <tr><td>2%</td><td>1.84</td></tr> <tr><td>5%</td><td>4.70</td></tr> <tr><td>10%</td><td>9.2</td></tr> </table> $\begin{array}{r} 1.84 \\ 4.70 \\ 9.20 \\ \hline 25.74 \\ -0.34 \\ \hline 25.40 \end{array}$	of 92		$\frac{1}{2}$ - 1%	0.92	2%	1.84	5%	4.70	10%	9.2
of 30																					
✓ 1%	0.3																				
2%																					
5%	1.5																				
10%	3																				
of 92																					
$\frac{1}{2}$ - 1%	0.92																				
2%	1.84																				
5%	4.70																				
10%	9.2																				

Using 1-2-5-10 sheet 3
Level 6

Use the 1-2-5-10 tables to work out the answers.

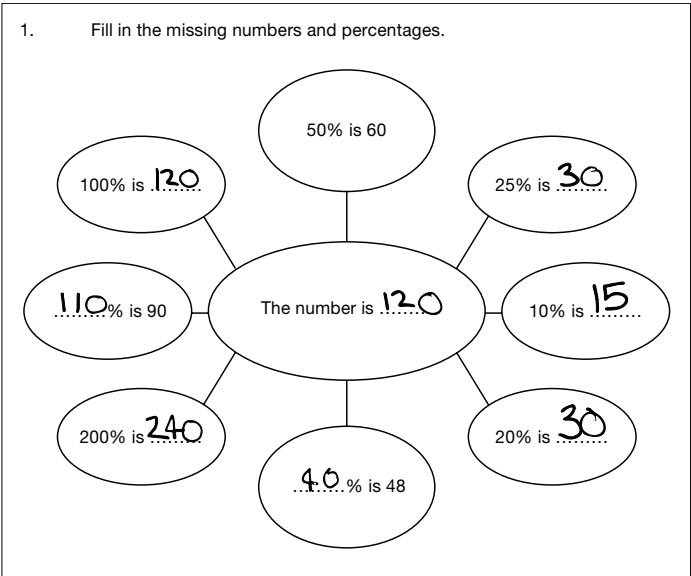
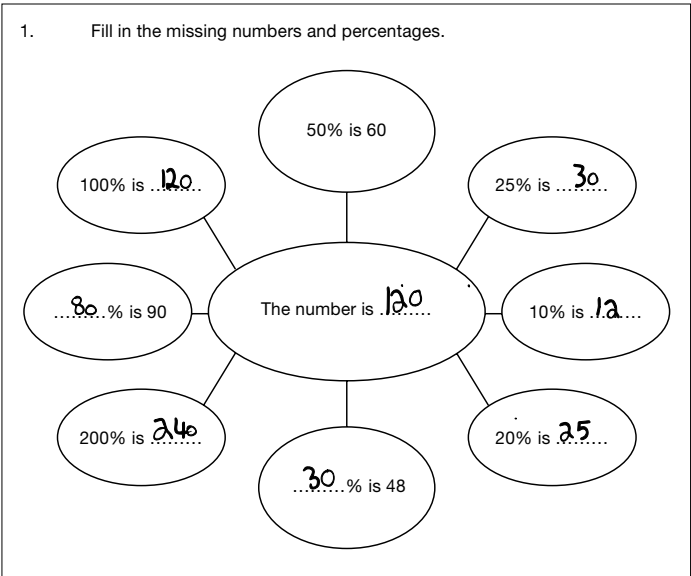
<p>$17 \times 14 = 238$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2">lots of 17</th></tr> <tr><td>1</td><td>17</td></tr> <tr><td>2</td><td>34 ✓✓</td></tr> <tr><td>5</td><td>85 ✓</td></tr> <tr><td>10</td><td>170</td></tr> </table> $\begin{array}{r} 34+ \\ 34+ \\ 170 \\ \hline 238 \end{array}$	lots of 17		1	17	2	34 ✓✓	5	85 ✓	10	170	<p>$32 \times 11 = 352$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2">lots of 32</th></tr> <tr><td>1</td><td>32 ✓</td></tr> <tr><td>2</td><td>64</td></tr> <tr><td>5</td><td>160</td></tr> <tr><td>10</td><td>320 ✓</td></tr> </table> $\begin{array}{r} 32+ \\ 320 \\ \hline 352 \end{array}$	lots of 32		1	32 ✓	2	64	5	160	10	320 ✓
lots of 17																					
1	17																				
2	34 ✓✓																				
5	85 ✓																				
10	170																				
lots of 32																					
1	32 ✓																				
2	64																				
5	160																				
10	320 ✓																				
<p>$16 \times 400 = 6400$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2">lots of 400</th></tr> <tr><td>1</td><td>400 ✓</td></tr> <tr><td>2</td><td>800</td></tr> <tr><td>5</td><td>2000 ✓</td></tr> <tr><td>10</td><td>4000 ✓</td></tr> </table> $\begin{array}{r} 400+ \\ 2000+ \\ 4000 \\ \hline 6400 \end{array}$	lots of 400		1	400 ✓	2	800	5	2000 ✓	10	4000 ✓	<p>$16\% \text{ of } 400 = 64$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2">of 400</th></tr> <tr><td>1%</td><td>4 ✓</td></tr> <tr><td>2%</td><td>8</td></tr> <tr><td>5%</td><td>20 ✓</td></tr> <tr><td>10%</td><td>40 ✓</td></tr> </table> $\begin{array}{r} 4+ \\ 20+ \\ 40 \\ \hline 64 \end{array}$	of 400		1%	4 ✓	2%	8	5%	20 ✓	10%	40 ✓
lots of 400																					
1	400 ✓																				
2	800																				
5	2000 ✓																				
10	4000 ✓																				
of 400																					
1%	4 ✓																				
2%	8																				
5%	20 ✓																				
10%	40 ✓																				
<p>$14\% \text{ of } 30 = 4.2$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2">of</th></tr> <tr><td>1%</td><td>0.3</td></tr> <tr><td>2%</td><td>0.6 ✓✓</td></tr> <tr><td>5%</td><td>1.5 ✓</td></tr> <tr><td>10%</td><td>3 ✓</td></tr> </table> $\begin{array}{r} 0.6+ \\ 0.6+ \\ 3 \\ \hline 4.2 \end{array}$	of		1%	0.3	2%	0.6 ✓✓	5%	1.5 ✓	10%	3 ✓	<p>$27.5\% \text{ of } 92 = 25.30$</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2">of</th></tr> <tr><td>1%</td><td>0.92 ✓</td></tr> <tr><td>2%</td><td>1.84 ✓</td></tr> <tr><td>5%</td><td>4.6 ✓</td></tr> <tr><td>10%</td><td>9.2 ✓</td></tr> </table> $\begin{array}{r} 0.92+ \\ 1.84+ \\ 4.60+ \\ 9.20 \\ \hline 25.56 \\ -0.26 \\ \hline 25.30 \end{array}$	of		1%	0.92 ✓	2%	1.84 ✓	5%	4.6 ✓	10%	9.2 ✓
of																					
1%	0.3																				
2%	0.6 ✓✓																				
5%	1.5 ✓																				
10%	3 ✓																				
of																					
1%	0.92 ✓																				
2%	1.84 ✓																				
5%	4.6 ✓																				
10%	9.2 ✓																				

Year 8

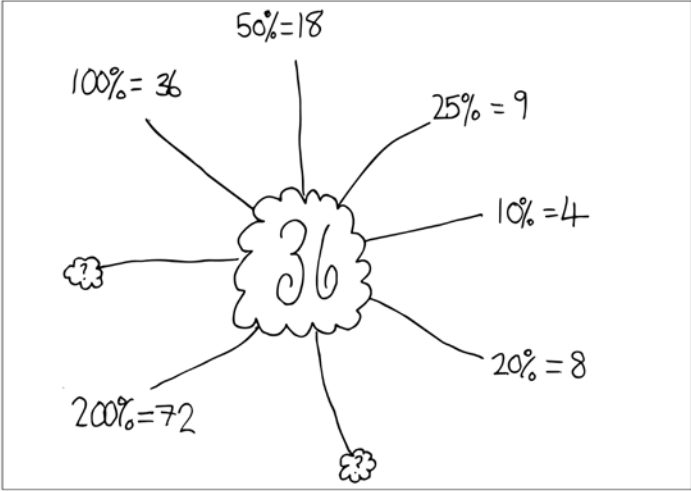
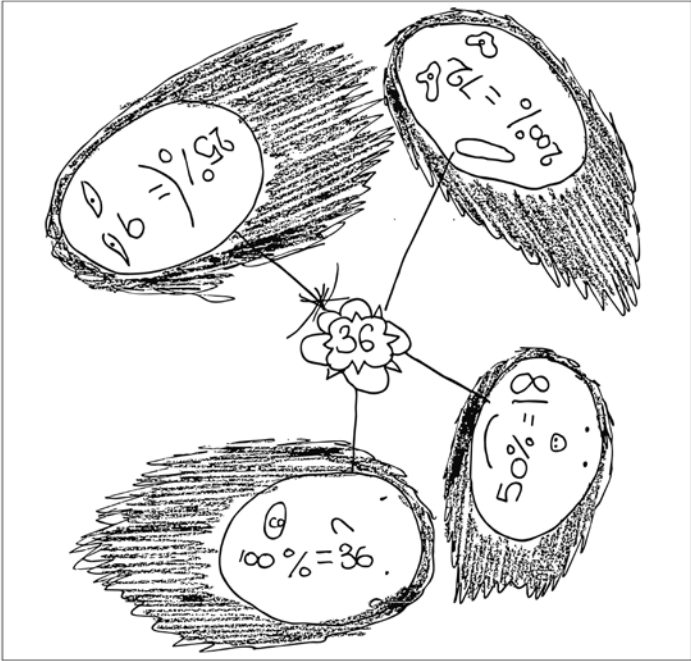
Number

LESSON 2: *Percentages!*

What's missing? sheet 1 (1st part)
Level 4

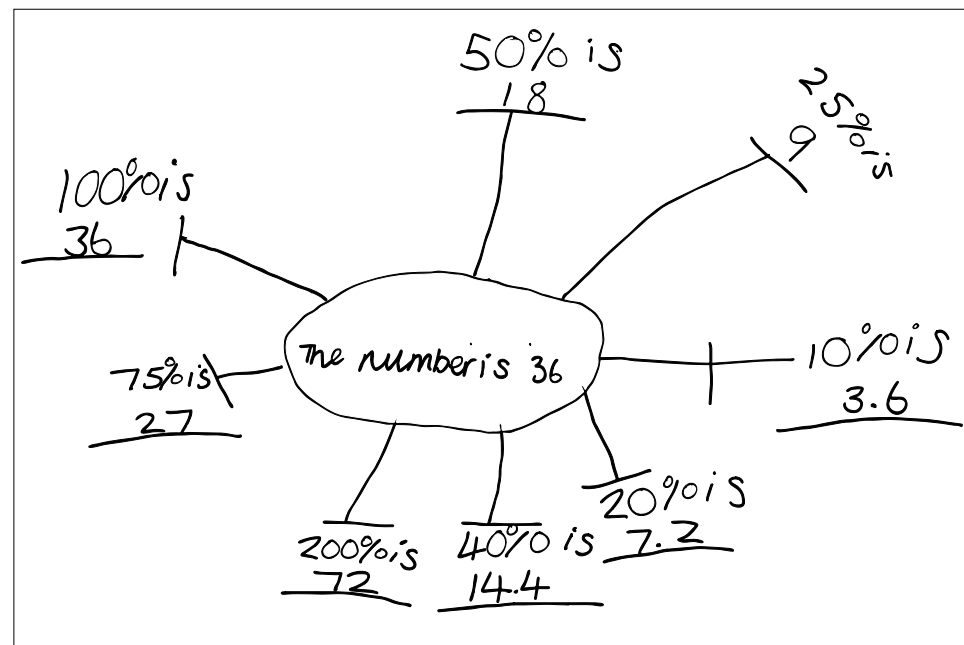
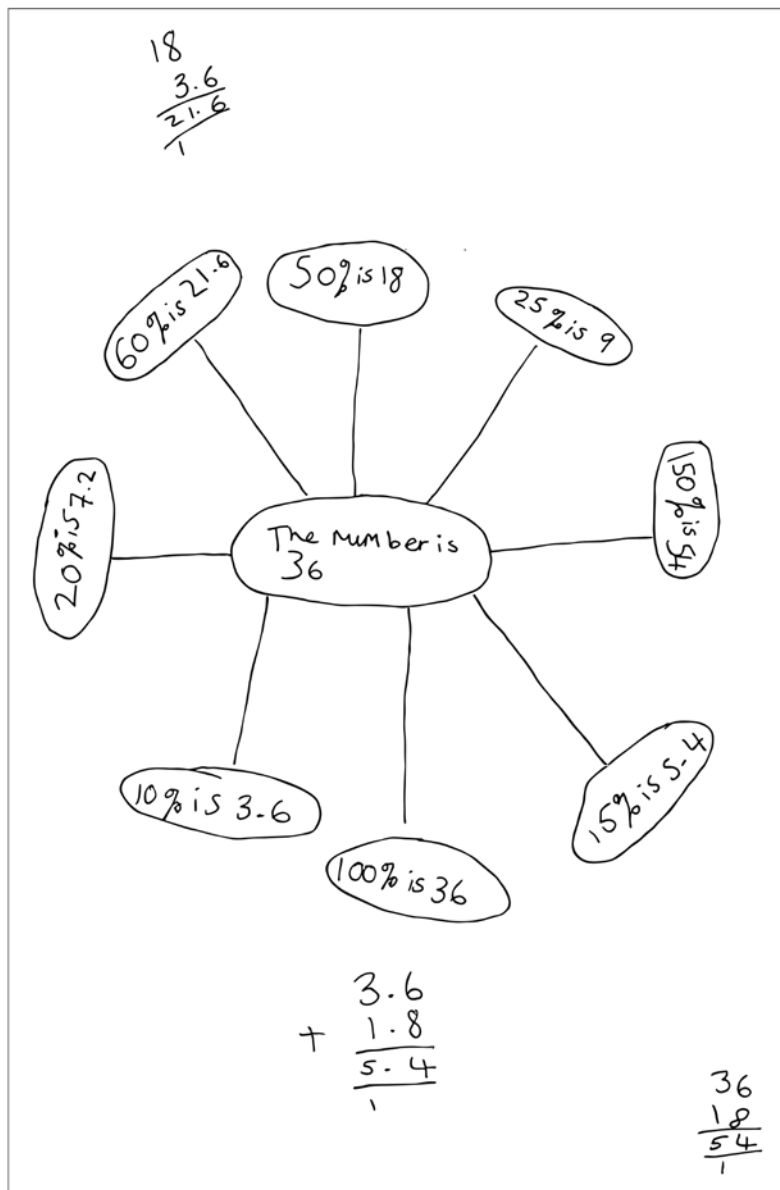


What's missing? sheet 1 (2nd part)
Level 4



What's missing? sheet 1 (2nd part)

Level 5



What's missing? sheet 2 (1st part)
Level 5

50% of it is 40	→	the number is ...80...
200% of it is 30	→	the number is ...15...
20% of it is 8	→	the number is ...40...
40% of it is 28	→	the number is ...70...
150% of it is 36	→	the number is ...72...

25% of it is ...13...	←	the number is 52	$4 \sqrt{512}$
...40% of it is 40	←	the number is 200	
11% of it is ...16...	←	the number is 150	
...150% of it is 77	←	the number is 44	
90% of it is ...0.09	←	the number is 0.1	

What's missing? sheet 2 (1st part)
Level 6

50% of it is 40	→	the number is ...80...
200% of it is 30	→	the number is ...15...
20% of it is 8	→	the number is ...40...
40% of it is 28	→	the number is ...80...
150% of it is 36	→	the number is ...24...

25% of it is ...13...	←	the number is 52
...20% of it is 40	←	the number is 200
11% of it is ...165...	←	the number is 150
...175% of it is 77	←	the number is 44
90% of it is ...0.09	←	the number is 0.1

What's missing? sheet 2 (2nd part)
Level 5

The number is 38 \rightarrow 50% is 19

The number is 38 \rightarrow ~~100%~~⁴⁵ is 57

The number is 38 $\xrightarrow{150}$ 100% is 38

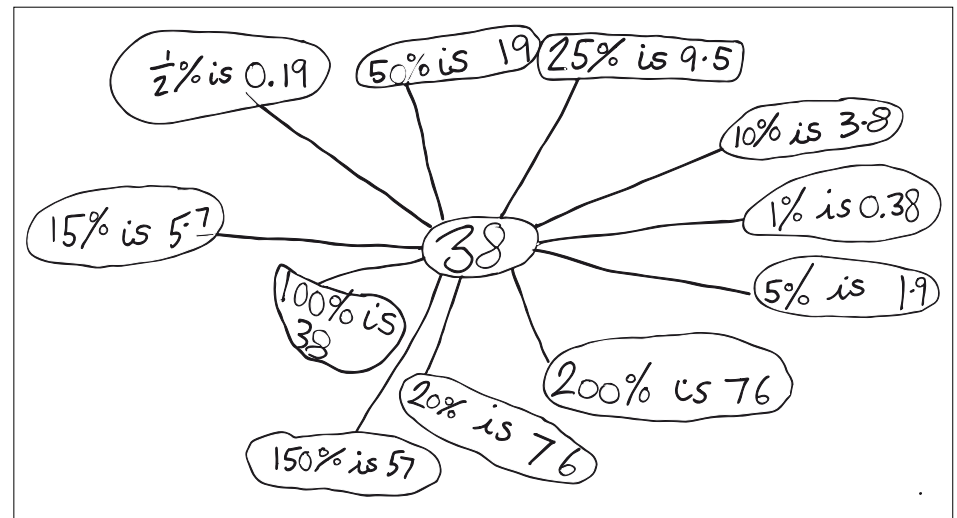
The number is 38 \rightarrow 200% is 76

The number is 38 \rightarrow 10% is 3.8

The number is 38 \rightarrow 20% is 7.6

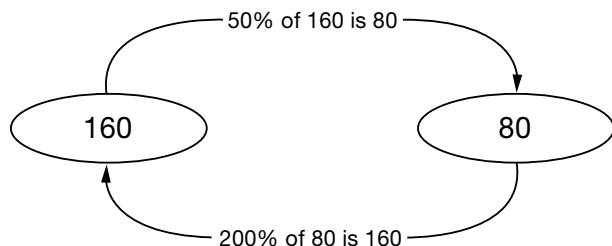
~~$\frac{8}{19}$~~
 $\frac{19}{19}$
 $\frac{19}{19}$
 $\frac{57}{2}$

What's missing? sheet 2 (2nd part)
Level 6



Doing and undoing
Level 5

Look at this diagram.



Does finding 200% of a number always 'undo' finding 50% of a number? *Yes*

How do you know?

Hint: you may find it helpful to write 50% as a fraction.

Because the number on the left is always double the number on the right and the number on the right is half the number on the left.

How do you 'undo' finding 25% of a number? or 20%? or $33\frac{1}{3}\%$?

<p><u>25%.</u> Find 50% and then halve the answer</p>	<p><u>20%.</u> Find 100% and then divide the answer by 5.</p>	<p><u>$33\frac{1}{3}\%$.</u></p>
---	---	---

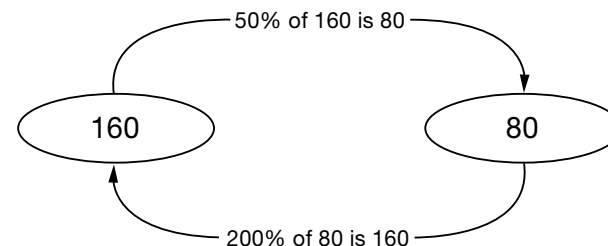
Each of the percentages used so far can be written as a fraction with a numerator of 1

How do you undo percentages that cannot be written as a fraction with a numerator of 1?

For example: 80%, 30%, $66\frac{2}{3}\%$, 150% and so on.

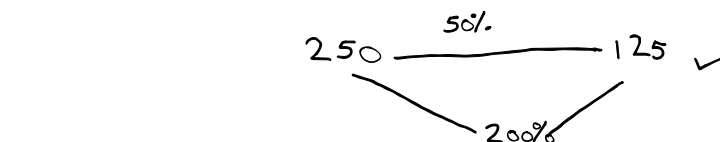
Doing and undoing
Level 6

Look at this diagram.

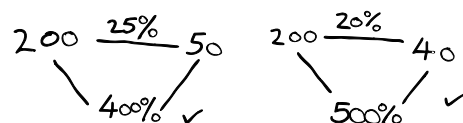


Does finding 200% of a number always 'undo' finding 50% of a number? *Yes*

How do you know? *because 5% divides by 2 and 200% multiplies by 2*



How do you 'undo' finding 25% of a number? or 20%? or $33\frac{1}{3}\%$?



Each of the percentages used so far can be written as a fraction with a numerator of 1

How do you undo percentages that cannot be written as a fraction with a numerator of 1?

For example: 80%, 30%, $66\frac{2}{3}\%$, 150% and so on.