Lesson 1:

Concept Corner (missing words):

- enlarged
- ratio
- 3
- proportionality

Questions:

1)a)i) 2:1

1)a)ii) 5

1)a)iii) 20 cm

1)b)i) 4:5

1)b)ii) 2

1)b)iii) 8 cm

1)c)i) 5:3

1)c)ii) 0.5

1)c)iii) 7.5 cm

2)a)i) DEF **is** an enlargement of ABC

2)a)ii) AB:BC:AC = 4:7:6

Constant of proportionality = 4

2)b)i) DEF **is not** an enlargement of ABC

- Only 2 sides have been halved.

2)c)i) DEF **is** an enlargement of ABC

2)c)ii) AB:BC:AC = 3:11:9

Constant of proportionality = 1.5

2)d)i) DEF **is not** an enlargement of ABC

- Only 2 sides have been multiplied by 2.5.

3)a) A = (0,0) B = (3,0) C = (3,2)
D = (6,0) E = (6,4) F = (9,0)
G = (9,6)

3)b)i) 3:2

3)b)ii) 3:2

3)b)iii) 1:3

3)b)iv) 1:2

3)b)v) 1:3

3)b)vi) 1:2

3)c)i) 2

3)c)ii) 3

3)c)iii) 1.5

4)a) 1.5

4)b)i) 3 cm

4)b)ii) 18 cm

4)b)iii) 4.5 cm

Questions for Depth:

1) The triangle you have drawn will be triangle ABC

2) $3.5 < n < 4$

3.5 comes from moving point F perpendicular to line DE so that it meets DE. This line is 3.5 times the length of DF. EF is longer than this.

4 comes from DE being 4 times the length of DF. EF is shorter than this (as DE is the longest side of the triangle).

Lesson 2:

Concept Corner (missing words):

- ratio
- constant
- 3

Questions:

1)a)i)	1:4	1)a)ii)	1:2
1)a)iii)	1:3	1)a)iv)	4:5
1)a)v)	1:4		
1)b)i)	1:3	1)b)ii)	1:1
1)b)iii)	1:2	1)b)iv)	4:1
1)b)v)	1:3		
1)c)i)	3:4	1)c)ii)	1:2
1)c)iii)	2:3	1)c)iv)	1:5
1)c)v)	3:4		
1)d)i)	3:1	1)d)ii)	1:1
1)d)iii)	2:1	1)d)iv)	1:4
1)d)v)	3:1		

2)a)	3:2	2)b)	3:2	2)c)	3:2
2)d)	1:3	2)e)	1:2	2)f)	3:2
2)g)	1:3	2)h)	1:2	2)i)	3:2
2)j)	1:3	2)k)	1:2	2)l)	3:2

3)a)	4:1	3)b)	4:1	3)c)	4:1
3)d)	1:3	3)e)	1:2	3)f)	3:2
3)g)	1:3	3)h)	1:2	3)i)	3:2
3)j)	1:3	3)k)	1:2	3)l)	3:2

4) All the ratios are the same for 2a, 2b and 2c.

All the ratios are the same for 3a, 3b and 3c.

All the other ratios match (2d & 3d, 2e & 3e, etc).

5)a)	4:3
5)b)	4:3
5)c)	4/3
5)d)	4/3
5)e)	3/4
5)f)	3/4

6)a)	1:2
6)b)	1:2
6)c)	1/2
6)d)	1/2
6)e)	2 (or 2/1)
6)f)	2 (or 2/1)

7) a, b & c have different answers for questions 2 and 3 as these are the ratios of 2 of the sides of the triangles.

All other ratios are the same as they are comparing the same side of the triangle and one triangle is an enlargement of the other. In both questions, the constant of proportionality between triangles ABC and ADF are the same (3), therefore the ratios are the same.

Questions for Depth:

Infinitely many possible answers.

Lesson 3:

Concept Corner (missing words):

- 2/5
- 2/3
- Amit
- Bernie

Questions:

1)a) 1/2 & 1/2

1)b) 1/3 & 2/3

1)c) 1/4 & 3/4

1)d) 1/5 & 4/5

1)e) 2/3 & 1/3

1)f) 1/2 & 1/2

1)g) 2/5 & 3/5

1)h) 1/3 & 2/3

1)i) 1/(n+1) & n/(n+1)

1)j) n/(n+2) & 2/(n+2)

1)k n/(m+n) & m/(m+n)

1)l) 1/3 & 2/3

2)a) A = 50 B=50

2)b) A = 33.3 (1dp) B = 66.7 (1dp)

2)c) A = 25 B = 75

2)d) A = 20 B = 80

2)e) A = 66.7 (1dp) B = 33.3 (1dp)

2)f) A = 50 B = 50

2)g) A = 40 B = 60

2)h) A = 33.3 (1dp) B = 66.7 (1dp)

2)i) A = 100/(n+1) B = 100n/(n+1)

2)j) A = 100n/(n+2) B = 200/(n+2)

2)k) A = 100n/(m+n) B = 100m/(m+n)

2)l) A = 33.3 (1dp) B = 66.7 (1dp)

3)a) 60

3)b) 90

3)c) 120

3)d) 150

3)e) 45

3)f) 60

3)g) 75

3)h) 90

3)i) 30 + 30n

3)j) 30 + 60/n

3)k) 90

3)l) 30 + 30m/n

4)a) A = £15 B = £10

4)b) A = £36 B = £24

4)c) 20 weeks

5)a) A = £2 B = £8 C = £10

5)b) £60

6)a) 4.5cm x 3cm = **13.5 cm^2**

6)b) 1.25cm x 6.25cm = **7.8125 cm^2**

Questions for Depth:

1)a) 18

1)b) 88

1)c) 8 + 40(n-1)

Lesson 4:

Concept Corner (missing words):

- 2/5
- 2/3
- Red
- White

Questions:

1)a) R = 10 l W = 15 l

1)b) R = 5 l W = 7.5 l

1)c) R = 200 ml W = 300 ml

1)d) R = 300 ml W = 450 ml

1)e) R = 2 pints W = 3 pints

1)f) R = 2x/5 l W = 3x/5 l

2)a) O = 125 ml W = 375 ml

2)b) O = 100 ml W = 400 ml

2)c) O = 200 ml W = 300 ml

2)d) O = 250 ml W = 250 ml

2)e) O = 62.5 ml W = 437.5 ml

2)f) O = 150 ml W = 350 ml

2)g) O = 166.7 ml (1dp) W = 333.3 ml (1dp)

2)h) O = 83.3 ml (1dp) W = 416.7 ml (1dp)

3)a) R = 0.5 l W = 1.5 l

3)b) R = 0.2 l W = 0.8 l

3)c) R = 0.7 l W = 2.3 l

4)a) x = 30° y = 60° z = 90°

4)b) x = 45° y = 45° z = 90°

4)c) x = 60° y = 60° z = 60°

4)d) x = 36° y = 72° z = 72°

4)e) x = 40° y = 60° z = 80°

4)f) x = 75° y = 75° z = 30°

5)a) Right angled

5)b) None

5)c) Equilateral

5)d) Equilateral

5)e) Isosceles (**could** be Right angled too)

5)f) Isosceles & Right angled

6)i)a) O = 250 ml W = 750 ml

6)i)b) O = 150 ml W = 350 ml

6)i)c) O = 120 ml W = 480 ml

6)i)d) O = 140 ml W = 210 ml

6)ii)

a & b	4:11	(1:2.75)	
a & c	37:123	(1:3.32 (2dp))	Least Orangey
a & d	13:32	(1:2.46 (2dp))	
b & c	27:83	(1:3.07 (2dp))	
b & d	29:56	(1:1.93 (2dp))	Most Orangey
c & d	26:69	(1:2.65 (2dp))	

First column shows which drinks were combined

Second column shows ratio O:W

Third column shows 1:n ratio – bigger n means more water which means less orangey drink

7) 11:49

Questions for Depth:

n = 1, m = 1 Equilateral

n = 1, m ≠ 1 Isosceles*

m = 1, n ≠ 1 Isosceles*

n = m ≠ 1 Isosceles

1+m+n = 2m Right angled*

1+m+n = 2n Right angled*

*could be both in these scenarios