Level 3 Block D Revision Non Calculator

Scale Drawing

1 Distances are measured on scale drawings which have different scales. For each measurement below write down the actual length represented:

1. 4∙3cm scale 1cm represents 5m
2. 10∙5cm scale 1cm represents 10m
3. 7cm scale 1cm represents 200m
4. 6∙2cm scale 1:100
5. 500mm scale 1:20
6. 3∙5cm scale 1cm represents 100km

2(a) Using a scale of 1cm represents 10m make an accurate scale drawing of the field shown below:

 90m

 75m

 (b) Using a scale of 1:200 make an accurate scale drawing of the room shown below:

 12m

 9m

3(a) Using a scale of 1cm represents 5m make an accurate scale drawing of the ramp shown below which makes an angle of 31° with the horizontal:

 ***h***

 ***30m***

 (b) From the drawing calculate the actual height that the ramp reaches.

4(a) Choose an appropriate scale to make a scale drawing of the mast shown below which has a wire attached to the top of it. The wire makes an angle of 22° with the ground.

2222222 22222222222222222

 ***h 21***°

 ***80m***

 (b) From the drawing calculate the height of the mast.

Algebra

5 Simplify the following expressions:

1. 3*x* + 7*y* + 6*x* + 4 -9*y* (b) 7*t* + 3*m –* 4*t* + 2*m* -2*t* (c) 5*x*2 + 3*x* -3*x2* -5*x*
2. 12*a* -4*b* +5 -4*a* + 6*b* -8 (e) 5*pq* + 2*p* + 4*pq* + 3*p* (f) -7*mn* + 2*n* + 5*mn* + 3*n*

6. If *p* = 2 and *q* = 5 find the value of:

 (a) 8*pq* (b) 4*p* + 3*q*  (c) 3*p*2 + 4*pq* (d) 9*p* – 3*q*  (e) *p2* + *q2* (f) 7*p*2 – 4*pq*

7. Solve these equations:

 (a) *x* + 10 = 7 (b) *x* – 5 = 4 (c) 3*m* = 15 (d) 7*t* = 5 (e) 3*c* = 8

 (f) 4*x* + 3 = 23 (g) 3*d* – 5 = 7 (h) 7*f* + 4 = 6 (i) 3*x* – 5 = 2 (j) 5*t* + 3 = 4

Area and Perimeter

8. Find the areas and perimeters of these shapes:

 (a) rectangle 6cm (b) square (c) right angled triangle

 4cm 3m 5mm 13mm

 12mm

1. square and rectangle 9m

 5m 3m

Area and Perimeter *(continued)*

8 (e) rectangle and triangle 10m

 4m

 4m 5m

 ‹ ›

 13m

9 The area of each of these shapes is 60cm2.

 Find the missing lengths in each case.

1. 12cm (b) *x* cm

 *x* cm 6cm

Percentages,Decimals and Fractions

10 Copy and complete this table, simplifying fractions fully:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Percentage |  63% |  42% |  |  |  |  |
| Decimal |  |  |  0∙35 |  0∙84 |  |  |
| Fraction |  |  |  |  | $$\frac{3}{5}$$ | $$\frac{9}{10}$$ |

11. Without using a calculator change the following fractions into decimals, writing your answers rounded to 2 decimal places:

 (a) $^{5}/\_{6}$ (b) $^{2}/\_{9}$ (c) $^{3}/\_{8}$ (d) $^{1}/\_{7}$ (e) $^{2}/\_{3}$

Statistics

12. Calculate the mean, median, mode and range of each set of data below:

 (a) 8, 4, 3, 7, 3, 5

 (b) 4, 9, 3, 9, 10

 (c) 9, 6, 8, 3, 5, 8, 7, 3

 (d) 2, 10, 5, 3, 7, 5, 2, 3, 4, 2

Answers Level 3 Block D Revision

Scale Drawing

1(a) 21∙5m (b) 105m (c) 1400m (d) 6∙2m (e) 10000mm = 10m (f) 350km

2(a) On the scale drawing, length should be 9cm, breadth should be 7∙5cm

(b) On the scale drawing, length should be 6cm, breadth should be 4∙5cm

3(a) On the scale drawing, 30m should be represented by 6cm

 (b) On the scale drawing, height should be 3∙6cm, giving an actual height of 18m. Heights of 3∙4, 3∙5, 3∙7 and 3∙8cm would give actual heights of 17, 17∙5, 18∙5 and 19m respectively *(length in cm on scale drawing is multiplied by 5)*

4(b) Height should be 31m or 30m

Algebra

5(a) 9x -2y + 4 (b) t + 5m (c) 2x2 -2x (d) 8a + 2b -3 (e) 9pq + 5p (f) 5n – 2mn

6(a) 80 (b) 23 (c) 52 (d) 3 (e) 29 (f) -12

7(a) -3 (b) 9 (c) 5 (d) $^{5}/\_{7}$ (e) $^{8}/\_{3}$ or 2$^{2}/\_{3}$ (f) 5 (g) 4 (h) $^{2}/\_{7}$ (i) $^{7}/\_{3}$ or 2$^{1}/\_{3}$ (j) $^{1}/\_{5}$

8 (a) (b) (c) (d) (e)

 Area 24cm2 9m2 30mm2 54m2 46m2

 Perimeter 20cm 12m 30mm 34m 32m

9(a) 5cm (b) 10cm

Percentages, Decimals and Fractions

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Percentage | 63% | 42% | 35% | 84% | 60% | 90% |
| Decimal | 0∙63 | 0∙42 | 0∙35 | 0∙84 | 0∙6 | 0∙9 |
| Fraction | $$\frac{63}{100}$$ | $$\frac{21}{50}$$ | $$\frac{7}{20}$$ | $$\frac{21}{25}$$ | $$\frac{3}{5}$$ | $$\frac{9}{10}$$ |

10

11(a) 0∙83 (b) 0∙22 (c) 0∙38 (d) 0∙14 (e) 0∙67

Statistics

12 (a) median=4∙5 mean=5 mode=3 range=5 (b) median=9 mean=7 mode=9 range=7 (c) median=6∙5 mean=6∙125 mode=8 range=6 (d) median=3∙5 mean=4∙3 mode=2 range=8