

## Year 9 Higher learn sheet: Jan 2018, Assessment 2

### Practise these revision questions:

1. What is the LCM of 80 and 100?

2. Draw the graph of  $y = x^2 + x + 2$

From  $x = -3$  to  $x = 2$

$x$	-3	-2	-1	0	1	2
$y$						

3. Find the area of a circle of diameter 8 cm giving your answer to 3 significant figures.

4. A bag has some red, green and blue marbles in it. If the probability of getting a red marble is 0.5 and for a green is 0.24, what is the probability of getting a blue marble?

5. The area of a rectangle is  $40\text{cm}^2$  to the nearest whole number. The width is 8cm to the nearest centimetre. Calculate the upper bound for the length of the rectangle.

6. If a sequence has the rule  $n^2 + n$ , then what is the 5th number in the sequence?

7. To make 12 cakes I need 150 grams of sugar. How much will I need for 18 cakes?

8. The stem and leaf diagram shows the number of miles travelled by a salesman each day for 14 days.

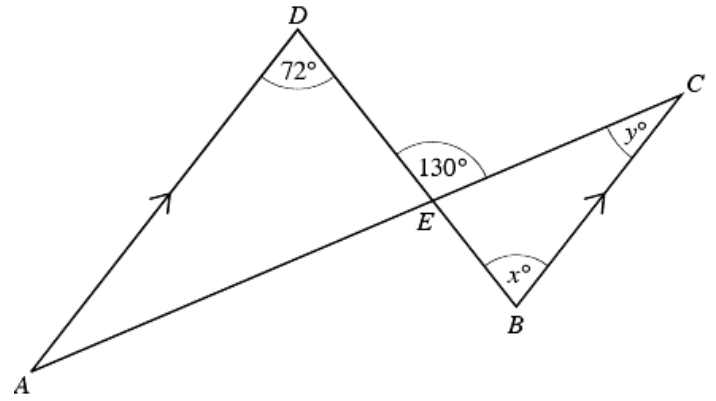
Key: 2 | 3 = 23 miles

1	2 3
2	3 6
3	5 7 7 8
4	1 3 4 8
5	2 5

What is the median distance he travels?

9. A TV cost £400 in a sale after it had 20% off the usual price. What was the usual price?

10. Find the size of angles  $x$  and  $y$



11. Solve these equations:

(a)  $4x + 12 = 52$

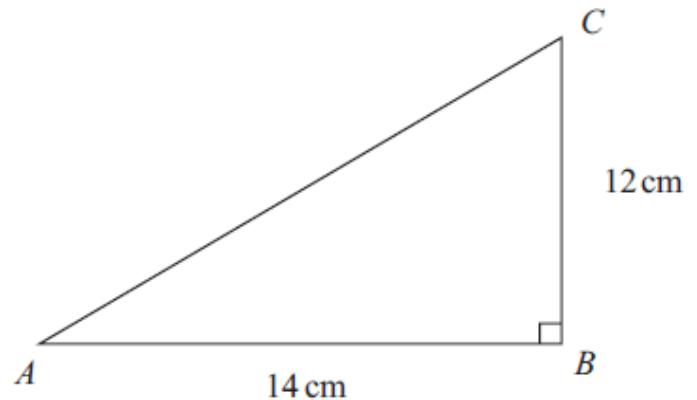
(b)  $4(x - 12) = 52$

(c)  $4x - 12 = x + 12$

(d)  $x - 2 = \frac{x + 12}{5}$

12. Work out 22.5% of £64

13. Work out the length of AC.



14. Calculate the mean mark from the table.

mark	frequency
20	8
25	2
30	6
40	4

15. I invest £400 in a bank which gives 2% compound interest for three years. How much money do I have in the bank after 3 years?

## Year 9 Higher topics to learn

Recipes
Significant figures
% of an amount
Mean from a frequency table
Using nth term
Area of a circle
Angles in parallel lines
Scatter graphs
Compound interest
Using a stem & leaf diagram

Drawing a quadratic graph
Simplify algebra
LCM
Loci - perpendicular bisector
Probability
Pythagoras
brackets/equations
Reverse %
Forming an equation

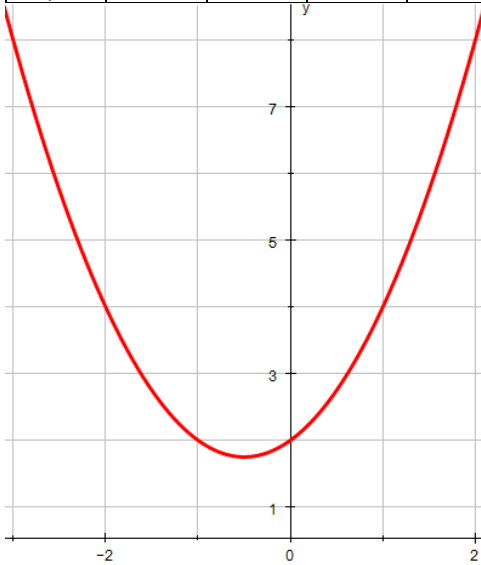
Algebraic proof
Trigonometry
Direct proportionality
Upper/lower bounds calculations
Volume of a sphere
Graph of inequalities
Vectors
Exponential graph
Quadratic solution formula

### Answers to practice questions:

1. 100, 200, 300, 400      answer = **400**  
80, 160, 240, 320, 400

2. Put the values of  $x$  into  $y = x^2 + x + 2$

$x$	-3	-2	-1	0	1	2
$y$	8	4	2	2	4	8



3. diameter 8 cm, so radius = 4 cm  
 $A = \pi r^2 = \pi \times 4^2 = \pi \times 16 = 50.265 = 50.3 \text{ cm}^2$  to 3sf

4.  $1 - 0.5 - 0.24 = \mathbf{0.26}$

5. largest length = biggest area  $\div$  smallest length  
 $= 40.5 \div 7.5 = \mathbf{5.4 \text{ cm}}$

6. Replace  $n$  with 5,  $n = 5$ ,  $5^2 + 5 = 25 + 5 = 30$

7. 12 cakes = 150 grams of sugar.  
6 cakes =  $150 \div 2 = 75$   
18 cakes =  $150 + 75 = \mathbf{225 \text{ grams}}$

8. 14 numbers, so the median is between the 7th and 8th numbers

1	2 3	7th number = 37
2	3 6	
3	5 7 7 8	8th number = 38
4	1 3 4 8	
5	2 5	<b><u>Median = 37.5</u></b>

9.  $\pounds 400 = 80\%$  (from 100% - 20%)  
Usual price =  $400 \div 80 \times 100 = \mathbf{\pounds 500}$

10.  $x = \mathbf{72^\circ}$  (alternate angles are equal)  
 $y = 130 - 72 = \mathbf{58^\circ}$  (external angles of a triangle equal the sum of the two opposite interior angles)

11. Solve these equations:

(a)  $x = 10$  (b)  $x = 25$  (c)  $x = 8$  (d)  $x = 5.5$

12.  $22.5 \div 100 \times 64 = 14.4 = \mathbf{\pounds 14.40}$

13. Using Pythagoras,  
 $AC^2 = 14^2 + 12^2 = 196 + 144 = 340$   
 $AC = \sqrt{340} = \mathbf{18.4 \text{ cm to 3sf}}$

14. Total of all marks = total of mark  $\times$  frequency  
 $20 \times 8 = 160$ ,  $25 \times 2 = 50$ ,  $30 \times 6 = 180$ ,  $40 \times 4 = 160$   
Total = 550  
Mean =  $550 \div 20 = \mathbf{27.5}$

15. year 1 =  $400 \times 1.02 = \pounds 408$   
year 2 =  $408 \times 1.02 = \pounds 416.16$   
year 3 =  $400 \times 1.02 = \mathbf{\pounds 424.48}$

(or do powers:  $400 \times 1.02^3 = \pounds 424.48$ )