



# Mathematics

“Stress-free Continuous Learning  
for 12 - 15 year old”

Sample Pages  
from  
JDB Workbooks

# JD BOOSTER<sup>TM</sup> MATHEMATICS

Build confidence through regular practise.

Date:.....

**001**  
ACTIVITY

**1** In the number 5890, what is the value of the figure 5 and 8?

NU/1

**2** Do the following problems:

- a)  $8.8 + 88 =$                       c)  $570 + 46 =$   
 b)  $9.3 + 91 =$                       d)  $2100 + 980 =$

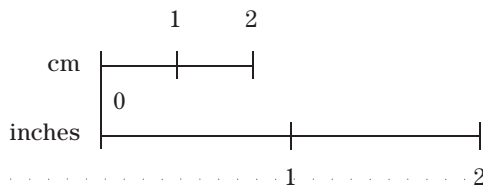
MM/2

**3** The lines below show the lengths of 2 cm and 2".

- a) How many centimetres are there in an inch?  
 b) Convert 50 cm to inches  
 c) Convert 10 inches to cm

You may use a ruler.

MC/1



**4** Multiply the following:

- 1)  $70 \times 40$   
 2)  $70 \times 400$

AE/1

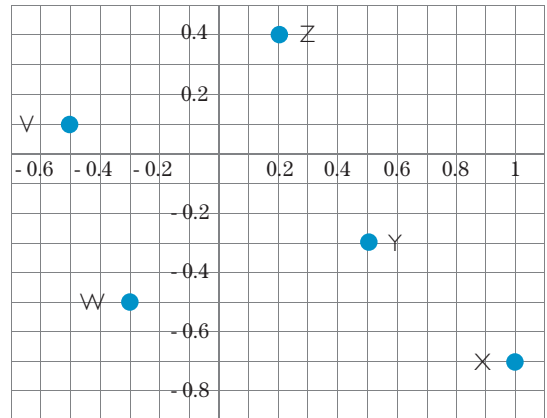
**5** Which number is the largest from the following:

$240, 24.000, 2.4 \times 10^3, 2400 \times 10^{-1}$

IN/2

**6** Write down the coordinates of V, W, Z, Y and X.

CF/1



**7** Complete the empty box with '<', '>', or '=' to make the following statement true:

$1586 \square 1568$

IN/1

**8** Given that  $y = -\frac{3}{4}x + 12$ , find value of y if  $x = 4$

CF/3

**9** A coach can be rented at a price of £100 per journey. If a group of 26 students want to rent a coach, how much in pounds should each person pay roughly?

AP/3

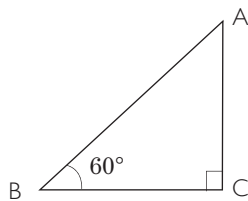


Date:.....

- 1 Using physics knowledge, it can be estimated that the contamination area after a nuclear power station leakage can reach  $31400\text{km}^2$ . Does a resident living 200km from the power station need to evacuate? (take  $\pi = 3.14$ )

AR/2

- 2 Given that vector AC has magnitude 5, find the magnitude of vector AB



TR/1

- 3 Quote the following numbers to 1 significant figure.

a) 3.1415    b) 1.456    c) 1.567

AP/2

- 4 The original price of a laptop computer is £879.99. If it is sold at 50% discount now, how much is the new discounted price roughly?

AP/2

- 5 Quote the following numbers to 3 significant figures.

a) 543.2    b) 876.4    c) 98.43

AP/1

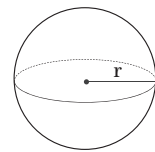
- 6 Solve.

a)  $103 \times 9$     b)  $405 \times 8$     c)  $902 \times 7$

MM/3



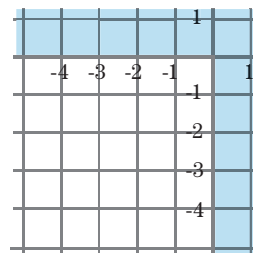
- 7 (i) Name the shape below  
 (ii) Write down the formula for volume of the shape.  
 (iii) Given volume of the shape is  $250\text{ cm}^3$ , find its radius.



Leave your answer to the nearest 2 s.f.

VO/3

- 8 What are the inequalities representing a range of solutions (non-shaded area) which lie within the third quadrant in the graph below?



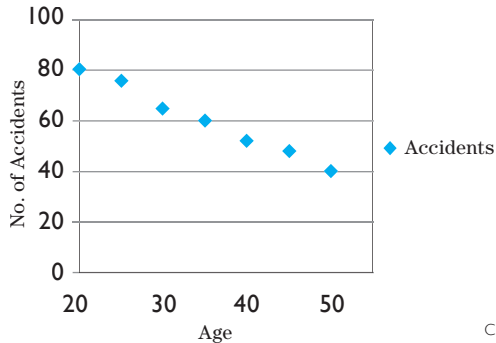
IN/4

- 9 Write a sequence where the term is always 2 times its preceding term, and its initial term is 3.

AL/1

Date:.....

- 1 The scatter graph below shows the number of accidents and the age of driver involved in the accident. Please answer if the graph shows a [strong or weak or moderate] correlation and whether it's a [positive or negative] correlation.



CF/4

- 2 There were an estimated 2 million worldwide audience who watched the F1 Race in Monaco. One fifth of these watched from within Monaco. How many watched outside of Monaco?

PE/2

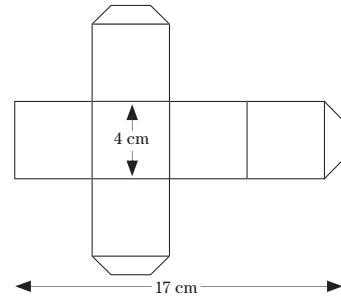
- 3 Solve the simultaneous equation  $2x + y = 4$  and  $3x + 2y = 16$ .

AE/3

- 4 If  $a = 5b + 4$  and  $b = 2a$ , find b.

AE/2

- 5 Calculate the area of the net, it is made up of 6 equal sided squares and 3 regular trapeziums. The measurements of the trapezium's smaller parallel side is 3 cm and the rest of the measurements are as given below.



MC/1

- 6 Describe the sequence that follows the pattern 2, 6, 18, 54, m and find value for 'm'.

SE/2

- 7 Find the factors of the number 24.

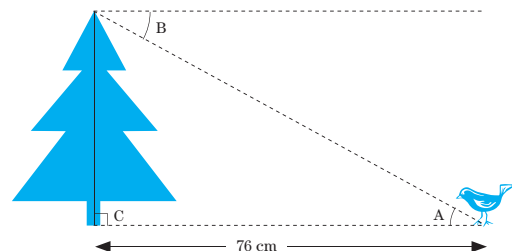
NU/3



- 8 Consider a pack of 52 playing cards. What is the probability that a randomly chosen card is a club but not 4?

PR/2

- 9 Identify and define the angle of Elevation and Depression in the diagram below.



SF/1

## ACTIVITY 001

- q.1** 5000 and 800
- q.2** a) 96.8      b) 100.3    c) 616  
d) 3080
- q.3** a) From the drawing or using a ruler => there are 2.5cm in an inch.  
b)  $50 / 2.5 = 20$  inches  
c)  $10 \times 2.5 = 25$  cm
- q.4** 1) 2800      2) 28000
- q.5**  $2.4 \times 10^3 = 2400$
- q.6**  $V = (-0.5, 0.1)$ ;  $W = (-0.3, -0.5)$ ;  $X = (1.0, -0.7)$ ;  $Y = (0.5, -0.3)$ ;  $Z = (0.2, 0.4)$
- q.7**  $1586 > 1568$
- q.8**  $y = 9$
- q.9**  $\approx \pounds 100/25 = \pounds 4$  Ans

## ACTIVITY 144

- q.1** Radius of the contaminated circle =  $\sqrt{(31400/3.14)} = \sqrt{10000} = 100$  km  
Since  $100 < 200$ , that resident does not need to evacuate.
- q.2** Vector AC = Vector AB  $\div \sin 60^\circ = 5 \div \sin 60^\circ = 5.77$  unit
- q.3** a) 3 (to 1 s.f.)    b) 1 (to 1 s.f.)  
c) 2 (to 1 s.f.)
- q.4**  $\pounds 879.99 \times 50\% \approx 880/2 = \pounds 440$
- q.5** a) 543 (to 3 s.f.)    b) 876 (to 3 s.f.)  
c) 98 (to 3 s.f.)
- q.6** a) 927      b) 3240      c) 6314
- q.7** i) Sphere  
(ii) Volume =  $4\pi r^3/3$   
where  $r$  = radius,  $h$  = height  
(iii) Volume =  $4\pi r^3/3 = 250$ ,  
 $r^3 = 59.659$ ,  $r = 3.9$  cm
- q.8**  $x < 0, y < 0$
- q.9** 3, 6, 12, 24, ... (Note that this is a geometric progression with  $a = 3$ ,  $r = 2$ )

## ACTIVITY 181

- q.1** Strong correlation since the points are generally close to the line of fit. It is a negative correlation meaning as the age increases the number of accidents decreases.
- q.2** Fraction watched outside of Monaco =  $1 - 1/5 = 4/5 \rightarrow$   
Audience outside of Monaco =  $4/5 \times 2$  million = 1.6 million.
- q.3** Let  $2x + y = 4 \rightarrow (1)$  and  $3x + 2y = 16 \rightarrow (2)$   
From (1)  $y = 4 - 2x$  substitute into (2)  $\Rightarrow 3x + 2(4 - 2x) = 16 \Rightarrow 3x + 8 - 4x = 16 \Rightarrow x = -8, y = 4 - 2(-8) = 20$
- q.4**  $a = 5b + 4 = 5(2a) + 4 \Rightarrow -4 = 10a - a \Rightarrow 9a = -4 \Rightarrow a = -\frac{4}{9}$ .  
So,  $b = 2a = -\frac{8}{9}$ .
- q.5** Perpendicular height of trapezium = 1cm  
 $\rightarrow$  Area of Trapezium =  $1/2 \times$  height  $\times$  (sum parallel sides) = 3.5  
 $\rightarrow$  Area of Squares: 16 cm  
 $\rightarrow$  Area of Net:  $(3 \times 3.5) + (6 \times 16) = 106.5 \text{ cm}^2$
- q.6** It is a Multiplying Factor type sequence where the common multiplier is 3  $\rightarrow 54 \times 3 = 162$
- q.7** Factors of a number are all numbers that divide into the number. 1, 2, 3, 4, 6, 8, 12, 24.
- q.8**  $P(\text{club but not 4}) = (\text{no of clubs} - \text{no of club 4}) / \text{total no of cards} = (13-1)/52 = 12/52 = 3/13$
- q.9** Angle A is angle of Elevation – defined as the angle upwards from horizontal. Angle B is angle of Depression defined as the angle downwards from horizontal.



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### CLASSIFICATION DETAILS

Category: Study Aid

Coverage: Mathematics for 12 - 15 year old

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