

DIAGNOSTIC TEST – Number & Algebra

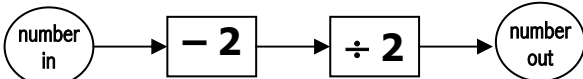
- 1) Order the following from smallest to largest:
a) 0.78, 0.789, 0.098, 0.7. b) -6, 2, 9, -5, -1.

- 2) a) Calculate i) 12.7×1000 ii) $12.7 \div 10$
b) Given that $123 \times 456 = 56088$, calculate
i) 123×4560 ii) 12.3×4.56

- 3) Round 123456 to the nearest
a) ten b) hundred c) thousand

- 4) Estimate an answer to $4969 \div 51$

- 5) a) If the number out is 98 what is the number in?



- b) Given that $123 \times 98 = 12054$, find $12054 \div 1.23$.

- 6) £1 is worth \$1.25. Change a) £55 → \$s b) \$100 → £s

- 7) a) Work out the best and worst value in coffee where coffee jar 1 contains 240g and is specially priced at £3, jar 2 contains 486g and is specially priced at £6 and jar 3 contains 500g and is specially priced at £6.45.
b) 16 pens cost £16.80; how much do 12 cost?

- 8) a) Calculate $3 + 5 \times 2 - 1$
b) Add brackets so that $1 + 4 \div 2 + 2 = 2$

- 9) a) Calculate i) $\sqrt{36}$ ii) 3^3 iii) $\sqrt{19321}$ iv) 2^5
b) Write $2 \times 2 \times 2 \times 2$ in **index** form.

- 10) Convert a) $\frac{5}{8}$ to a decimal b) 0.06 to a fraction.

Extra Challenge c) Which of following fractions can be written as terminating decimals: $\frac{2}{3}, \frac{3}{4}, \frac{10}{11}, \frac{19}{20}$

- 11) Write a) $\frac{5}{8}$ as a % and b) 8% as a fraction.

- 12) 5 parts of a pizza topping are mushroom, 3 parts are onion. What fraction of the topping is onion?

- 13) a) Calculate 45% of £120

- b) Calculate $\frac{4}{11}$ of 4 cm. Give answer exactly.

- 14) a) Order the fractions $\frac{1}{4}, \frac{3}{7}, \frac{4}{9}, \frac{1}{5}$ from smallest

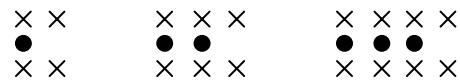
to largest. b) Find a fraction between $\frac{1}{9}$ and $\frac{2}{9}$.

- 15) Simplify a) $5f + 7 - 6f - 1$ b) $3ab \times 3c$

- 16) Given that $x = -2$ and $y = 3$, calculate the value of the following expressions: a) $3x + 3$ b) $2y^2$

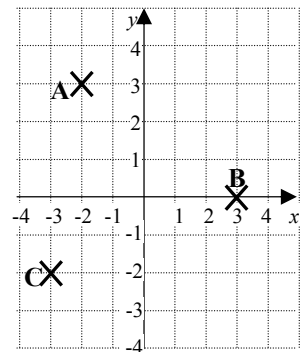
- 17) a) Caroline counts out 12 piles of x marbles onto her table. How many marbles does Caroline have?

- b) How many crosses will there be when there are 4 dots and when there are n dots?



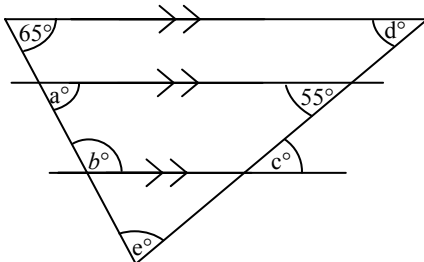
- 18) a) Write down the co-ordinates of A, B and C.

- b) Write down the co-ordinates of the midpoint of BC.



DIAGNOSTIC TEST – Shape & Space

- 1) Calculate the angles a , b , c , d and e , justifying your results.



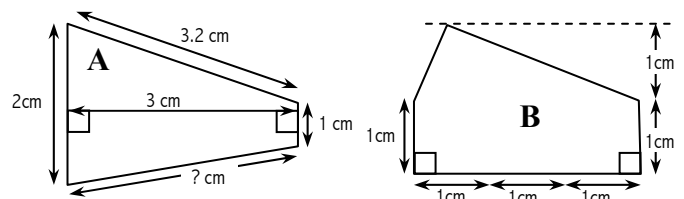
- 2) Name the two quadrilaterals that have both pairs of opposite angles equal but that are not 90° .

- 3) a) Approximately how many pints is 1 litre?
b) Approximately how far is 5 miles in km?

- 4) a) How many lines of symmetry does
i) a rectangle have?
ii) a regular 5-sided polygon have?

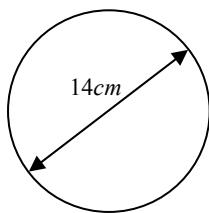
- b) State the order of rotational symmetry of i) and ii).

- 5) Calculate the area of the two shapes:



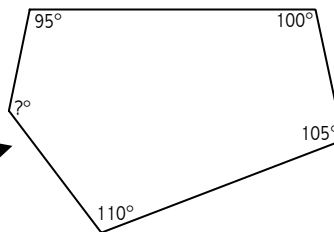
DIAGNOSTIC TEST – Shape & Space *continued*

- 6) Calculate
 a) the circumference and
 b) the area of a circle with **diameter** 14cm as shown.



*If your calculator has a π button then use it, otherwise use $\pi = 3.142$.
 If you are happy rounding your answer to 3 significant figures then do so, otherwise just write down the first 5 digits (without rounding).*

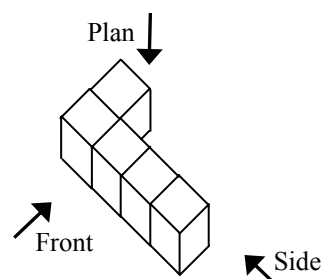
- 7) a) Calculate the missing angle.
 b) Calculate the exterior angle of a regular 10 sided shape.



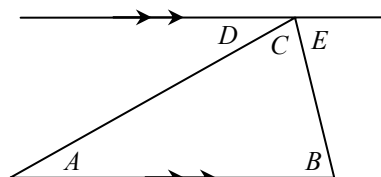
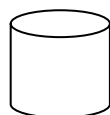
- 8) a) Construct a triangle with sides 3, 5 and 7cm. b) Draw a regular 5-sided polygon.

- 9) **Accurately** draw the front, side and plan elevations of the given shape.
 Assume the side of each cube is 1cm.

On your side view add a solid line to show the difference in height.
 On your front view add a dotted line to show the hidden difference in thickness on the far side of the shape.



- 10) Sketch the net of a cylinder, closed at both ends, 3cm tall and with a **diameter** of 4cm.
 Use $\pi = 3.14$ in your calculation and show the correct dimensions of the net.



- 11) With reference to this diagram, explain in simple terms why the angle sum of the triangle must be 180° .

DIAGNOSTIC TEST – Handling Data

- 1) a) Complete the table and b) draw the pie chart.

Car Colour	Frequency	Angle in Pie Chart
Red	20	
Green	15	
Blue	10	
Total		

- 2) Using the stem numbers 10, 15, 20, 25, display the following data in a stem and leaf diagram, and find the median value.

11, 11, 11, 12, 12, 15, 19, 21, 23, 25, 27, 27, 29, 29, 29.

- 3) a) What is the probability that a 6-sided fair dice i) lands on a 5? and ii) does **not** land on a 5?
 b) The probabilities of a biased 4-sided dice are shown in the table below.
 Calculate the probability that the dice lands on a 4.

Score	1	2	3	4
Probability	0.05	0.1	0.15	?