

Level 3 Test – Knowledge

Name

60 minutes Calculator allowed Scribbling paper allowed

Score: $\frac{1}{33} \times 1.58 = \frac{1}{52}$

| Number | | |
|---------------|---|----|
| Q1 | Write 147.6 in scientific notation. | /1 |
| Q2 | Write 7.22×10^{-4} in decimal notation. | /1 |
| Q3 | Maggie borrowed \$12 000 at 6.5% p.a. simple interest for 5 years. How much interest will she pay? | /1 |
| Q4 | How much will you need to invest at 5% p.a. simple interest to get \$400 interest after 2 years? | /1 |
| Q5 | If 40 L of jet fuel costs \$105, how much could you buy for \$370? | /1 |
| Q6 | 5 people can sort 2000 letters in 2 hours. How long would 8 people take to sort 600 letters? Answer in minutes. | /1 |

| Algebra | | |
|----------------|--|----|
| Q7 | Solve $5(x + 4) - 7 = 2x + 4$, showing working. | /2 |

| | | |
|-----|---|----|
| Q8 | <p>Write and solve an equation to work out the following: Large packs of marshmallows contain 12 more marshmallows than the small packs. If you buy 3 large packs and 6 small packs, you get 8 more marshmallows than if you buy 10 small packs. How many marshmallows would you get if you bought 2 large packs and one small pack?</p> | /2 |
| Q9 | Solve $\left(\frac{2x-4}{3}\right)^2 - 15 = 21$, showing working. | /2 |
| Q10 | Re-write $h = \frac{3s-1}{5} - 7$ with s as the subject. | /1 |
| Q11 | What is the maximal domain of $y = \frac{84}{\sqrt{16-x^2}}$? | /1 |

| | | |
|-----|---|----|
| Q12 | Write a table showing a relation between x and y such that y is a function of x but x is not a function of y . | /1 |
| Q13 | What is the formula for a linear function whose graph is perpendicular to $y = 2x - 3$, given that $y = 4$ when $x = -1$? | /1 |
| Q14 | Solve $\frac{5}{2x-1} = 12$ | /1 |
| Q15 | Simplify as far as possible $a^4 \div \left(\frac{a^3 \times a}{a^6}\right)^3$ | /1 |

| Measurement | | |
|--------------------|---|----|
| Q16 | The shorter sides of a right-angle triangle are 10 cm and 8 cm. To 2 decimal places, what is the triangle's perimeter? | /1 |
| Q17 | A hill has a gradient of 18%. Shirley walked up the hill gaining 174 m in altitude. How far did she walk? | /1 |
| Q18 | A road runs east-west. Herbie noticed a tower due north of him. After walking 2.4 km along the road, the tower was on a bearing of 318° . How far was the tower from the road? | /1 |
| Q19 | A 10 m wire is strung tightly from the top of a 6 m vertical pole to the horizontal ground. What angle does the wire make with the ground to the nearest degree? | /1 |
| Q20 | The formula $\frac{1}{4}\pi ab$, where a and b are lengths is for a perimeter an area a volume (circle one) | /1 |
| Q21 | The diameter of the Sun is about 100 times that of Earth. About how many times greater is its volume? | /1 |

Geometry

Q22

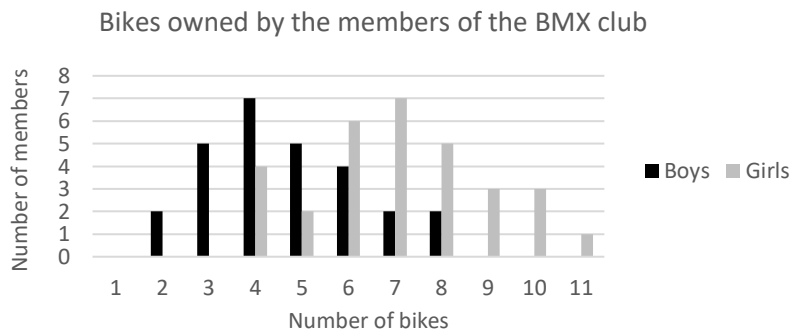
Sue's eyes are 1.6 m above the ground. She notices that the top of a pole 4 m away from her is exactly in line of sight with the top of a tree 13 m beyond the pole. Assuming the ground is horizontal, how tall is the tree? Show a diagram and working.

/2

Statistics

Q23

This graph shows the number of bikes owned by members of the BMX club.

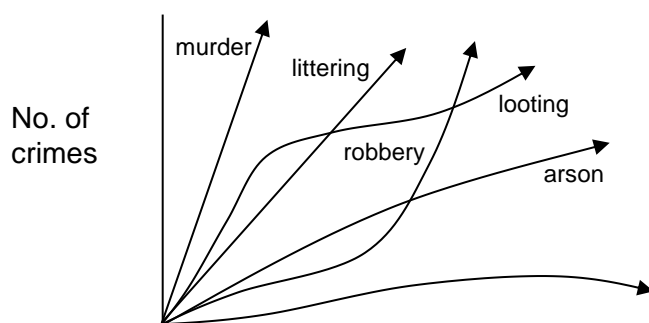


/1

What is the most common (modal) number of bikes owned by the boys?

Q24

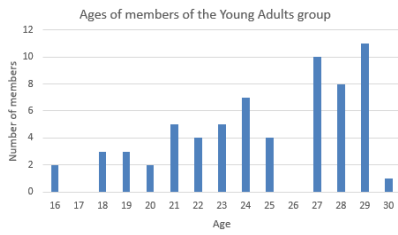
Add a few things to make this into a decent graph. You can be creative.



/3

Q25

Is the distribution below symmetrical, positively skewed or negatively skewed?



/1

Probability

Q26

Draw a tree diagram for rolling a 4-sided die numbered 1 to 4 and tossing two coins. Show the probabilities at each stage.

/2