

3

Answer all the questions

By writing each number correct to 1 significant figure, estimate the value of 1 $\sqrt{121.3} - 2.613^2$ 1.734×1.04^{3}

Answer[2]

2 Find the smallest integer y satisfying 4y > -12.

(a) Given that (a, 3) lies on the line 2y = x-3, find the value of a. 3

Answer a = [1]

(b) Find the coordinates of the *y*-intercept of the line 2y = x - 3.

Answer (.....) [1]

4 The point R lies on the PQ. PR: RQ = 3:7.

· · ·

784

(a) Write PR as a fraction of PQ.

(b) *PR* is 15 cm. Calculate *PQ*. Answer[1]

5 Simplify $\frac{6x^2y}{16} \div \frac{2x}{4y}$.

Give your answer as a single fraction in its simplest form.

. ·

6 P is a point (1, 4) and Q is the point (a, 3). The gradient of the line PQ is $\frac{1}{4}$. Find the value of a.

Answer a =[2]

7 The cost of taking a group of students to an Arts Museum can be calculated from the information given in the table below.

Number of students	Cost per student	Cost per paying adult
Less than 10	\$6	\$9
10 to 19	\$5.50	\$8
20 to 29	\$5	\$7

• 1 adult enters free for every 10 students

Find the cost for a group of 26 students and 4 teachers.

Answer \$.....[2]

8 Calculate the arc length of a sector of a circle with angle 63° and radius 8 cm.



9 (a) Find obtuse angle B such that $\sin B = 0.6$.

Answer B =......[1]

(b) 2.8 280% $\frac{20}{7}$ 2.87

. -

Write these numbers in order, starting with the smallest.

smallest

10 A group of students were asked to sign up for their favourite holiday activity. The results are shown in the bar graph.





(b) Figure C is an enlargement of Figure A using a scale factor of x. The horizontal length of Figure C has a length of 8 units. What is the scale factor x?

12 (a) Simplify 7a - 12b - 3a + 10b.

Answer[2]

13 A map is drawn to a scale of 1 : 500 000.

Simplify $\frac{x+2}{5} + \frac{2x}{3}$.

(b)

(a) On the map, the perimeter of a reservoir is represented by a length of 22.8 cm. Calculate the actual perimeter of the reservoir, giving your answer in kilometres.

(b) The actual area of a plantation is 460 km². Calculate the area on the map which represents the area of the plantation.

14 The graph shows the parking charges in a shopping mall for a 24-hour period.



Edwin took part in a race and ran an initial distance of 900 m at an average speed of 6 km/h. After that, he cycled a further distance of 2 km in 12 minutes.

Calculate his average speed for the whole race in km/h.





Answer angle $PRQ = \dots^{\circ} [1]$

(b) Find the length of BC.

Answer BC = cm [2]

Write 756 as a product of its prime factors.

		Answer[2] What is the largest perfect cube that is a factor of 756?		
(b)	Answer What is the largest perfect cube that is a factor of	of 756?	[:	

Answer[1]

17

(a)

- 18 Ryan travelled from Singapore to Barcelona for his vacation three years ago.
 - (a) His flight to Barcelona cost \$1190 after a discount of 15%. Calculate the original price of the flight ticket.

Answer \$.....[2]

(b) The table shows information about Ryan's planned expenditure, in Euros (ϵ), in Barcelona.

Items	Expenditure (€)
Hotel	480
Transport	135
Food	350

The exchange rate between Singapore dollars (S\$) and Euros (\mathcal{E}) was $\mathcal{E}1 = S$ \$1.5232. Calculate Ryan's total expenditure in Singapore dollars.

Answer S\$[2]

19 Solve $x = \frac{8}{x-4}$, giving your answers correct to 2 decimal places. Show your working.

> 2010 - 2010 - 2010 - 2010 2011 - 2010 - 2010





HC and AB are parallel lines.

ACE, GCD and BCF are straight lines.

(a) Find q, giving a reason for your answer.

 $q = \dots$ [2]



Answer p =[2]

21 It is given that p is a positive integer.

a is found by adding 3 to *p* and multiplying the result by *p*. *b* is found by subtracting 8 from the product of -10 and *p*. The sum of *a* and *b* is zero.

(a) Show that $p^2 - 7p - 8 = 0$.

Answer

(b) Using factorisation, solve $p^2 - 7p - 8 = 0$ to find the positive integer p.

Answer p =[2]

[2]

Figure A shows a solid ornament made up of a cylinder of radius 30 cm and height 70 cm and a hemisphere of radius 30 cm.



(a) Using $\pi = 3.142$, find the volume of Figure A and write down its exact value.

(b) The solid is melted and recast into a prism shown in Figure B.Find the length, l, of the prism.

Answercm [2]



. -

23 The graph below shows a line representing the equation 2x + y = 3.

(a) By drawing the line $y = \frac{1}{2}x - 2$ on the grid, find the solution of the two simultaneous equations, 2x + y = 3 and $y = \frac{1}{2}x - 2$.

Answer x =

y =[3]

(b) Write down the equation of a line with the same gradient as the line $y = \frac{1}{2}x - 2$ and passes through (0, 5).

Answer[1]

24

Sturt Community School has a field which is surrounded by a 6 m wide running track (shaded region).

The field has two semicircular ends, each with radius 25 m and two straight sides, each of length x m.

The perimeter of the field is 350 m.



(a) Using $\pi = 3.142$, show that the length of x = 96.45 m.

Answer

(b) Hence, find the area of the field.

Answerm² [2]

25 The diagram shows a decorative ornament in the shape of a triangular prism.



(a) Use pythagoras' theorem to calculate the value of h.

Answer h =cm [2]

(b) Calculate the total surface area of the prism.

End of Paper