

JUNIOR RELAY SECONDARY 2002

R1 3 points

(97 points left)

What is the size of the angle in a regular decagon?

Answer: _____

R2 4 points

(93 points left)

In a certain family it is known that there are two children, at least one of whom is a boy.
What is the probability that, in this family, the other child is also a boy?

Answer: _____

R3 6 points

(87 points left)

Find the value of the sum of these amounts of money:

$0.\dot{2}$ of \$90, $0.\dot{0}1$ of \$198, $0.0\dot{9}$ of \$100.

(N.B. in the 2nd amount both 0 and 1 are repeating)

Answer: _____

R4 7 points

(80 points left)

Rain falls on a flat rectangular roof 20 metres by 10 metres. It flows into an empty cylindrical tank with radius of 4 metres. If 50mm of rain fell on the roof, what is the depth of the water in the tank to nearest one-tenth of a centimetre?

Answer: _____

R5 3 points

(77 points left)

The five vowels a, b, c, d and e are engraved on five metal discs, one letter on each disc. The discs are placed in a container and two letters are drawn at random, one after the other. What is the probability that the letter 'c' was drawn first and the 'a' second?

Answer: _____

R6 4 points

(73 points left)

Solve for x the equation $\frac{2x + 1}{x + 7} = -4$

Answer: _____

R7

6 points

(67 points left)

A woman bought an article for $\$a$ and sold it for $\$b$, and made a profit on the transaction. What was the profit percentage she made?

Answer: _____

R8

7 points

(60 points left)

A sum of money was invested for four months, at 4.4% per annum simple interest. If the interest gained after the four month period was \$1173.33, what was the original sum of money invested?

Answer: _____

R9

3 points

(57 points left)

A double page of 'The Chronicle' is 60cm by 40cm. How many sheets of these double 'Chronicle' pages would be needed to cover one hectare of flat land, if tearing of the pages is allowed?

Answer: _____

R10 **4 points**

(53 points left)

It is known that $a^m \times a^n = a^{m+n}$.

Hence simplify the expression $\frac{5^x + 5^{x+3}}{5^x}$

Answer: _____

R11 **6 points**

(47 points left)

In an election where there were only two candidates, the majority to the winner was 1620. This majority represented $\frac{3}{13}$ of the total number of votes. How many votes did the loser get?

Answer: _____

R12 **7 points**

(40 points left)

A retailer buys an article for \$100. He makes a profit of 26% on his buying price after allowing a discount of 10% on the marked price of the article. What was the marked price of the article?

Answer: _____

R13 3 points

(37 points left)

Write as one fraction:

$$\frac{5x}{2} + \frac{4x}{3} + \frac{3x}{4}$$

Answer: _____

R14 4 points

(33 points left)

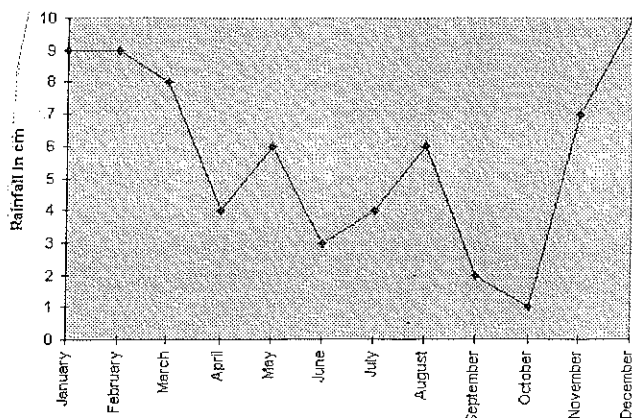
Melinda visits a zoo and takes a picture of a one-metre snake lying against a brick wall. In the developed picture the one-metre snake is 2 cm long and the wall is 4.5 cm high. What was the actual height of the brick wall in cm?

Answer: _____

R15 6 points

(27 points left)

Below is the average rainfall in Dryland for the year 1995. What is the average rainfall for the year? Round your answer to the nearest tenth.



Answer: _____

R16 **7 points**

(20 points left)

Two spheres of diameter 6 cm and 4 cm touch each other at a point A as they rest on horizontal table. How high is A above the table?

Answer: _____

R17 **3 points**

(17 points left)

What is the smallest integral (whole number) value that 1.1 must be raised to in order to get a value greater than 5?

Answer: _____

R18 **4 points**

(13 points left)

A common mixture for making concrete is: 1 part cement, 2 parts sand and 4 parts gravel, by volume. In one cubic metre of the dry mixture, what will be the volume of sand in cubic centimetres?

Answer: _____

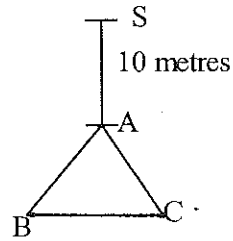
R19

6 points

(7 points left)

A sheep (S) is tethered by a rope to one corner (A) of a building ABC, which is in the shape of an equilateral triangle of side 9 m.

If the length of the rope is 10 m, on how much area can the sheep graze?



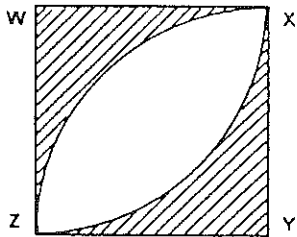
Answer: _____

R20

7 points

(0 points left)

WXYZ is a square, with sides of length 20 cm. Arcs of circles with centres at W and Y are drawn through X and Z as shown. Find the area of the shaded region, to the nearest square centimetre.



Answer: _____

MATHS TEAMS CHALLENGE (2002)

Relay Answer sheet JUNIOR SECONDARY

Question	Answer	Attempts x or /							Score	Progressive Score
		7	6	5	4	3	2	1		
R1 (3 points)	144°									
R2 (4 points)	1/3 or 0.3									
R3 (6 points)	\$32.00									
R4 (7 points)	19.9cm or 19cm 9mm									
CHANGE										
R5 (3 points)	1/20; 0.05; or 1 in 20									
R6 (4 points)	-29/6 or -4 5/6, -4.83									
R7 (6 points)	$\frac{100(b-a)}{a}\%$ or $\frac{(100b - 100)}{a}\%$									
R8 (7 points)	\$80 000									
CHANGE										
R9 (3 points)	41666 2/3 or 41667									
R10 (4 points)	126									
R11 (6 points)	2700									
R12 (7 points)	\$140									
CHANGE										
R13 (3 points)	$\frac{55x}{12}$									
R14 (4 points)	225cm									
R15 (6 points)	5.8cm									
R16 (7 points)	2 2/5cm or 2.4cm									
CHANGE										
R17 (3 points)	17									
R18 (4 points)	285714 2/7 cm ³ or 285714.43 cm ³									
R19 (6 points)	$\frac{202\pi m^2}{3}$ or 211m ² or 212m ² or 2.11+dec nl m ²									
R20 (7 points)	171cm ² or 172cm ²									
									TOTAL	

School: _____

Team 1: Team 2: