

JUNIOR RELAY 1995

R. 1 (3 points)

(97 points remaining)

If $\frac{a}{b} = 3$, find the value of $\frac{a^2 + 4ab}{b^2}$

Answer: _____

R. 2 (4 points)

(93 points remaining)

A farmer wishes to seed and fertilise a 1200 m by 750 m paddock.
If it costs \$35.80 per hectare, how much will it cost?

Answer: \$ _____

R. 3 (5 points)

(88 points remaining)

At a family reunion there are 8 people of the same age and 5 other people of the same age but a different age from the first 8. The total of all ages in years is 184. How old is the younger group, if it is 3 years younger than the older group?

Answer: _____ years

R. 4 (8 points)

(80 points remaining)

One full glass contains vinegar and water in the ratio 1:3. Another glass of twice the capacity of the first glass has vinegar and water in the ratio 1:4. If the contents of the both glasses were mixed together, what now is the ratio of vinegar to water?

Answer: _____:

R. 5 (3 points)

(77 points remaining)

The surface area of a cubic toy block is 72 cm^2 . What is the volume of the block, correct to 2 decimal places?

Answer: _____

R. 6 (4 points)

(73 points remaining)

A carport is extended by increasing both its length and breadth 10%. By what percentage will its area be increased?

Answer: _____

R. 7 (5 points)

(68 points remaining)

The adjacent sides of a rhombus are $(2x + 3)$ cm and $(5 - x)$ cm.
Find its actual perimeter?

Answer: _____

R. 8 (8 points)

(60 points remaining)

A re-roofing company, employing seven workers, contracted to re-roof several houses in 20 days. However, before even commencing the first roof, two of the seven workers are unfit for work. How long will it now take the company to complete the work contracted, assuming the workers still work at the same rate?

Answer: _____

R. 9 (3 points)

(57 points remaining)

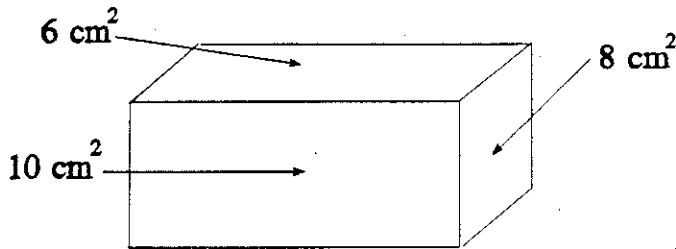
7, a, b, c, d, and 28 are numbers equally spaced on the number line.
Find the value of $a + b + c + d$.

Answer: _____

R. 10 (4 points)

(53 points remaining)

Three faces of a rectangular prism have areas 6 cm^2 , 8 cm^2 and 10 cm^2 respectively. Find the volume of the prism to the nearest one-tenth of a cm^3



Answer: _____ cm^3

R. 11 (5 points)

(48 points remaining)

At noon, a cyclist leaves town A and travels towards town B at a constant speed of 20 kmph. 30 minutes later another cyclist leaves B and travels at a constant speed of 30 kmph towards A. At what time do they meet if A and B are 100 km apart?

Answer: _____

R. 12 (8 points)

(40 points remaining)

4 different personal letters are written L_1 , L_2 , L_3 and L_4 . Each is designed to go into different envelopes E_1 , E_2 , E_3 and E_4 , matching the corresponding letters written. If the letters are then put randomly into the envelopes, what are the chances that all letter ended up in the correct envelopes?

Answer: _____

R. 13 (3 points)

(37 points remaining)

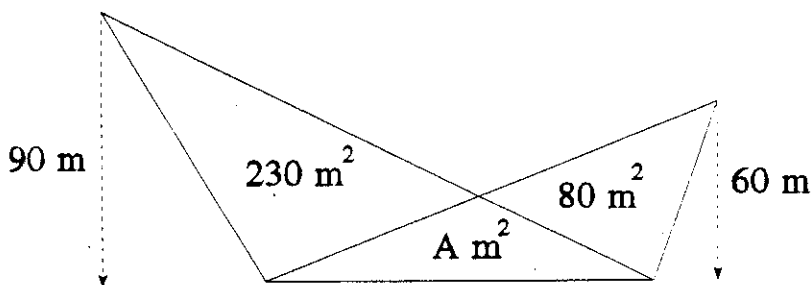
How many 3 digit numbers are divisible (without remainder) by 7?
(Zero is not allowed as the initial digit).

Answer: _____

R. 14 (4 points)

(33 points remaining)

A piece of land common to two triangular paddocks is $A \text{ m}^2$. Find the size of this area.



Answer: _____

R.15 (5 points)

(28 points remaining)

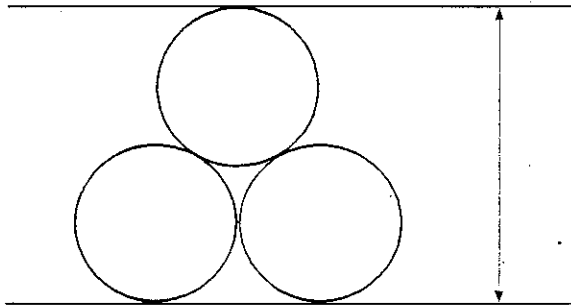
A pie can be cut into portions (not necessarily of equal size) by making 4 straight line cuts across it. What is the maximum number of pieces of pie that can result?

Answer: _____

R. 16 (8 points)

(20 points remaining)

3 concrete pipes of radius 1 metre are stacked as shown.
Find the height of the stack, to the nearest cm.



Answer: _____ m _____ cm

R. 17 (3 points)

(17 points remaining)

If $a + b = 5$, $b + c = 6$, and $a + c = 7$, find the values of a , b , and c .

Answer: _____

R. 18 (4 points)

(13 points remaining)

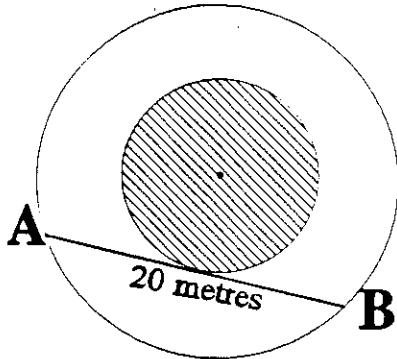
The sum of the angles of a polygon is 1980° . How many sides has the polygon?

Answer: _____

R. 19 (5 points)

(8 points remaining)

If the line AB is a tangent to the smaller circle (this means that AB is perpendicular to the radius of the smaller circle) and is 20 metres long, find the area of the unshaded region to the nearest square metre. HINT: The unshaded area is $\pi R^2 - \pi r^2$ where R and r are the radii respectively, of the larger and smaller circles. The point of tangency is half-way along the tangent.



Answer: _____ m²

R. 20 (8 points)

(0 points remaining)

During a holiday it rained on 9 days. However, whenever it rained in the morning it was fine in the afternoon and every rainy afternoon was preceded by a fine morning. There were 7 fine mornings and 8 fine afternoons. How many days were there in the holiday?

Answer: _____ days

Maths Teams Challenge 1995
RELAY Score/Answer Sheet
JUNIOR SECONDARY

QUESTION	POINTS	ANSWER	✓ or X	PROGRESSIVE SCORE
1	3	21		
2	4	\$3222		
3	5	13 YEARS		
4	8	13:47		
		CHANGE		
5	3	41.57cm ³		
6	4	21%		
7	5	17 ¹ / ₃ cm		
8	8	28 days		
		CHANGE		
9	3	70		
10	4	21.9cm ³		
11	5	14:18 h or 2:18pm		
12	8	¹ / ₂₄ or 1:24 or 1 in 24		
		CHANGE		
13	3	128		
14	4	220m ²		
15	5	11		
16	8	3m 73cm or 373cm		
		CHANGE		
17	3	a = 3; b = 2; c = 4		
18	4	13		
19	5	314m ²		
20	8	12 days		

SCHOOL:

TEAM: 1 / 2

TOTAL: