

NORTH SYDNEY GIRLS HIGH SCHOOL

TERM 4 2003 MATHEMATICS Yr 10.

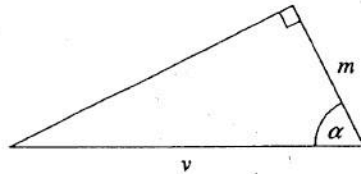
Time: 50 minutes

- Answer on the answer sheet provided.

1. A room contains 4 adults, 3 boys and 2 girls.
If one person is chosen at random, what is the probability that the person is an adult?

A. $\frac{1}{3}$ B. $\frac{1}{4}$ C. $\frac{4}{9}$ D. $\frac{4}{5}$

2.

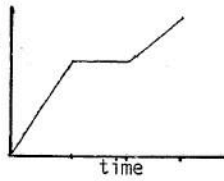


Which statement is correct?

- (A) $m = v \sin \alpha$
(B) $v = m \sin \alpha$
(C) $m = v \cos \alpha$
(D) $v = m \cos \alpha$

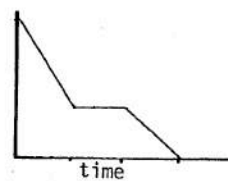
3. A cyclist travels towards home with one stop on the way.
The cyclist travels faster after the stop than before the stop.
Which graph best represents this information?

A. distance from home



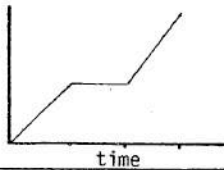
C.

distance from home



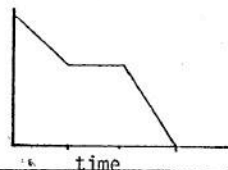
B.

distance from home

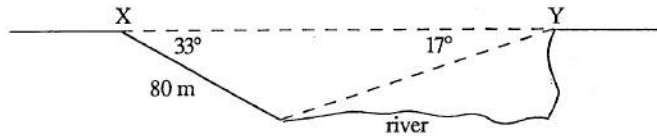


D.

distance from home



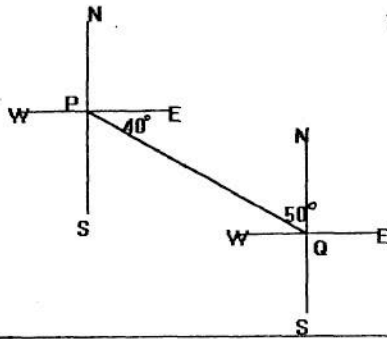
4. Engineers want to construct a bridge from X to Y. What is the length of XY?



NOT TO SCALE

- (A) $\frac{80 \sin 17^\circ}{\sin 130^\circ}$ (B) $\frac{80 \sin 33^\circ}{\sin 17^\circ}$ (C) $\frac{80 \sin 130^\circ}{\sin 33^\circ}$ (D) $\frac{80 \sin 130^\circ}{\sin 17^\circ}$

5.



The bearing of P from Q is

- (A) 040°
- (B) 050°
- (C) 130°
- (D) 310°

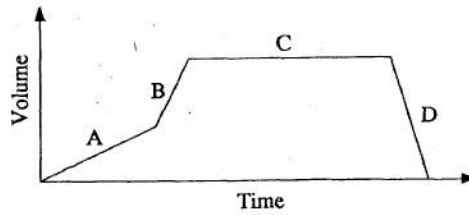
6.

Neil, Geoff, Amanda and Janice decide to play tennis.

If the pairs are chosen at random, what is the probability that Neil and Geoff will play together?

- (A) $\frac{1}{2}$
- (B) $\frac{1}{3}$
- (C) $\frac{1}{6}$
- (D) $\frac{1}{12}$

7.



The graph shows the volume of water in a tank at any given time.

Which section of the graph (A, B, C, or D) shows the time when the volume is INCREASING most rapidly?

8.

Which one of the following tables is consistent with y varying directly with x ?

A

x	1	2	3	4
y	4	3	2	1

C

x	1	2	3	4
y	3	6	9	12

B

x	1	2	3	4
y	1	4	9	16

D

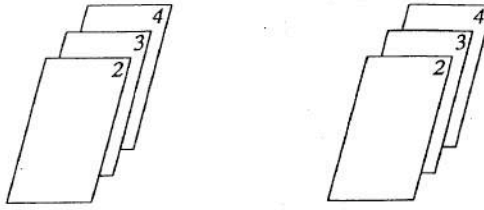
x	1	2	3	4
y	1	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$

9.

If two coins are tossed, the probability of obtaining at least one head is

- (A) $\frac{1}{4}$
- (B) $\frac{1}{2}$
- (C) $\frac{2}{3}$
- (D) $\frac{3}{4}$

10.

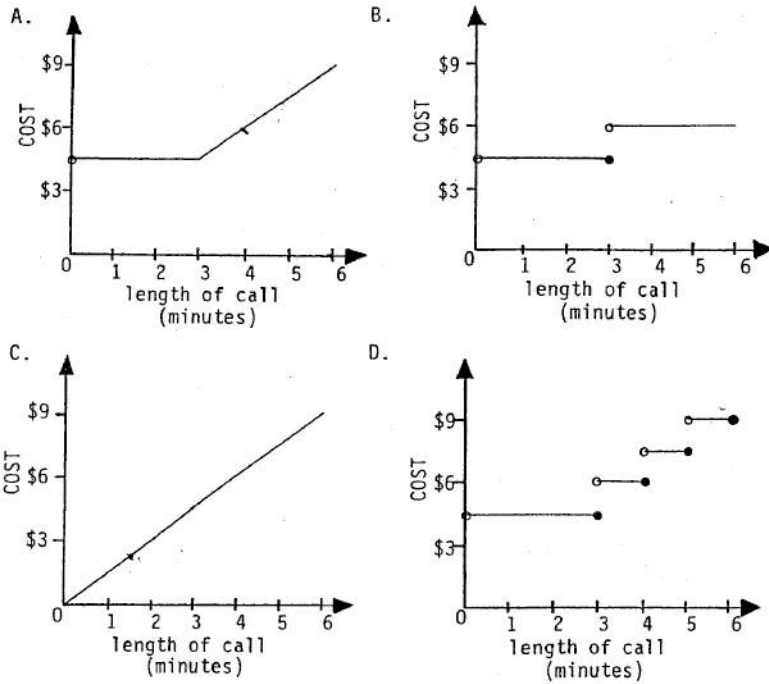


A card is chosen at random from each of the above piles.

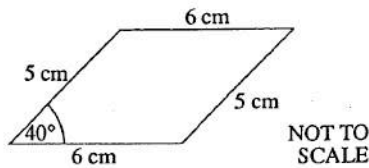
If the numbers on the two cards chosen are added together, what is the probability that the total is even?

- (A) $\frac{1}{3}$ (B) $\frac{4}{9}$ (C) $\frac{5}{9}$ (D) $\frac{2}{3}$

11. A telephone call to the South Pacific costs \$4.50 for 3 minutes or less. Each additional minute (or part thereof) costs a further \$1.50. Which graph represents this information?



12.



The area of this parallelogram is closest to

- (A) 19.3 cm^2
 (B) 23.0 cm^2
 (C) 30.0 cm^2
 (D) 38.6 cm^2

13.



On a television game show there are 9 squares.

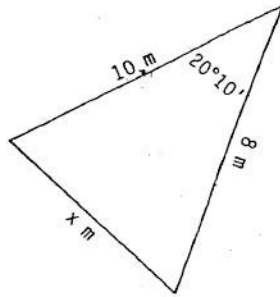
Behind 3 of the squares there is a cash amount. Behind every other square there is a prize.

Two of the squares have already been turned over.

What is the probability of turning over a cash amount next?

- (A) $\frac{2}{9}$ (B) $\frac{2}{7}$
 (C) $\frac{1}{3}$ (D) $\frac{1}{2}$

14.



$$x^2 =$$

- A. $164 + 80 \cos 20^\circ 10'$
 B. $164 - 80 \cos 20^\circ 10'$
 C. $164 + 160 \cos 20^\circ 10'$
 D. $164 - 160 \cos 20^\circ 10'$

15.

An integer is selected at random from the integers 3 to 10 inclusive.

The probability that the integer is divisible by 2 and 3 is

- (A) $\frac{1}{8}$ (B) $\frac{3}{16}$ (C) $\frac{3}{4}$ (D) $\frac{7}{8}$

16.

Direct variation exists between members of the ordered pairs (x, y) .

x	0	1	2	
y	0		$\frac{2}{3}$	2

The numbers required to complete the table are

- A $\frac{1}{3}$ and 6. C 3 and $\frac{2}{3}$.
 B $\frac{1}{3}$ and 3. D $\frac{1}{3}$ and 1.

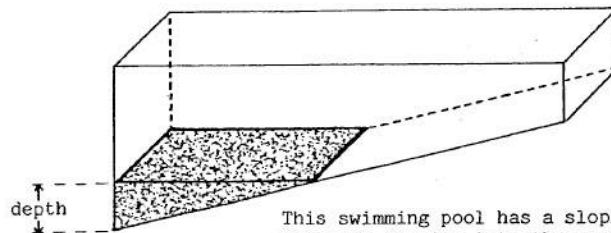
17.

A jar contains two red lollies and one green lolly of the same size and shape.

If two lollies are selected at random, what is the probability that they are both red?

- (A) $\frac{1}{6}$ (B) $\frac{1}{3}$ (C) $\frac{4}{9}$ (D) $\frac{2}{3}$

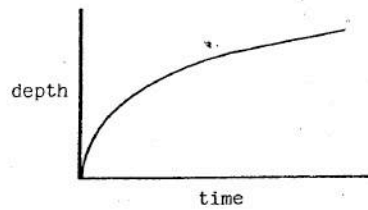
18.



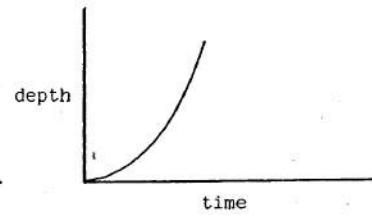
This swimming pool has a sloping bottom .
Water is flowing into the pool at a constant rate.

Which graph best illustrates the change in depth
of water with time ?

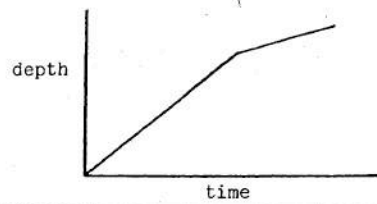
A.



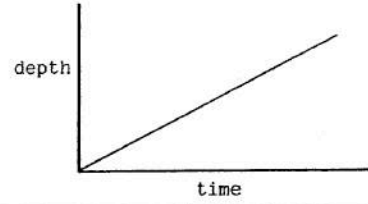
B.



C.



D.



19.

Make G the subject of the formula $E = 1 - \sqrt{\frac{G}{R}}$.

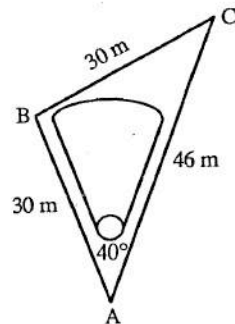
(A) $G = R(1 + E)^2$

(B) $G = R(1 - E^2)$

(C) $G = R(1 - E^2)$

(D) $G = R(1 - E)^2$

20.



The triangle ABC is roped off to hold a
shotput event at an athletics carnival.

The area roped off is closest to

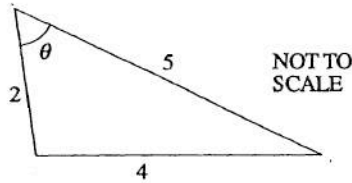
(A) 444 m^2

(B) 450 m^2

(C) 529 m^2

(D) 887 m^2

21.

The size of angle θ is closest to

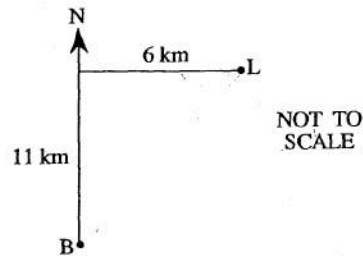
- (A) $49^{\circ}28'$
 (B) $53^{\circ}8'$
 (C) $63^{\circ}26'$
 (D) $66^{\circ}25'$

22.

The time taken to complete a journey varies **inversely** as the speed. A car takes 4 hours to complete a journey when travelling at 60 km/h. Find the time taken to complete a journey if the car travels at 75 km/h.

- (A) 1 hour 20 mins
 (B) 3 hours 12 mins
 (C) 5 hours
 (D) 8 hours 10 mins

23.



A bushwalker has walked 11 km North from base B and then 6 km in an Easterly direction to a lookout at L.

What is the bearing of L from B (to the nearest degree) ?

- (A) 029° (B) 033°
 (C) 057° (D) 061°

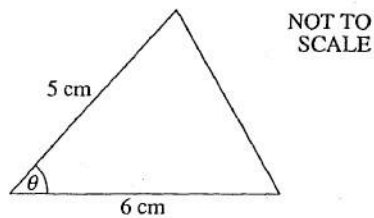
24.

A bird cage contains four doves. Two are white and two are grey.

If two doves escape, find the probability that one is white and one is grey.

- (A) $\frac{1}{4}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) $\frac{2}{3}$

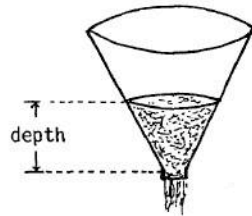
25.



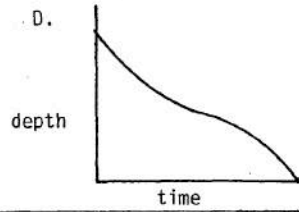
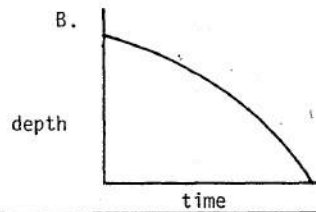
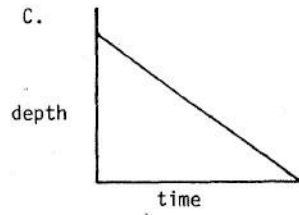
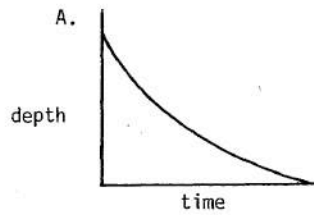
Find the value of $\sin \theta$ if the area of this triangle is 10 cm^2 .

- (A) $\frac{1}{3}$ (B) $\frac{2}{3}$ (C) $\frac{3}{2}$ (D) 3

26.



Water flows out of a conical funnel at a constant rate. Which graph best illustrates the change in depth of water with time?



27. The probability of a three-child family consisting of two girls and one boy is

(A) $\frac{1}{8}$

(B) $\frac{1}{4}$

(C) $\frac{3}{8}$

(D) $\frac{2}{3}$

28.

Make G the subject of the formula $V = \frac{G^2 h}{4\pi}$ for $G > 0$.

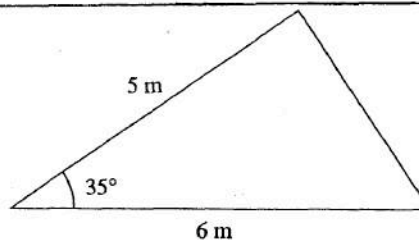
(A) $G = \frac{V^2 h}{4\pi}$

(B) $G = \sqrt{\frac{4\pi V}{h}}$

(C) $G = \frac{\sqrt{4\pi V}}{h}$

(D) $G = \sqrt{4\pi V - h}$

29.



The area of this triangle is closest to

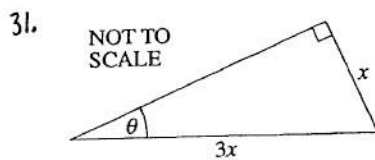
(A) 8.6 m^2

(B) 12.3 m^2

(C) 17.2 m^2

(D) 24.6 m^2

30. If $w \propto \sqrt{d}$ and $w = 18$ when $d = 0.25$ then
- (a) $w = 9\sqrt{d}$ (b) $w = \frac{9}{\sqrt{d}}$
- (c) $w = 36\sqrt{d}$ (d) $w = \frac{36}{\sqrt{d}}$

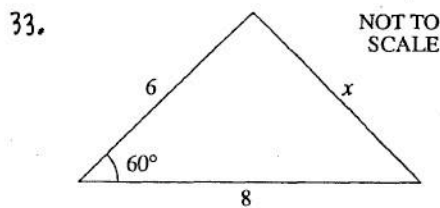


The size of angle θ is

- (A) $18^\circ 26'$
 (B) $18^\circ 43'$
 (C) $19^\circ 28'$
 (D) $19^\circ 47'$

32. If F is proportional to m^3 then doubling m would result in

- (A) doubling F (B) trebling F
- (C) increasing F to 6 times its original value
- (D) increasing F to 8 times its original value

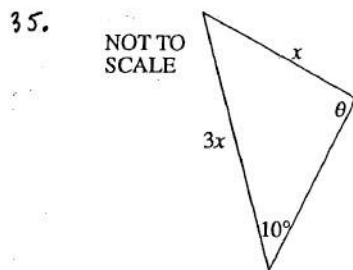


The value of x is closest to

- (A) 2.0
 (B) 4.1
 (C) 7.2
 (D) 8.7

34. Make y the subject of $2y = 1 - xy$.

- (A) $y = \frac{1-x}{3}$ (B) $y = \frac{1}{2+x}$ (C) $y = \frac{1-xy}{2}$ (D) $y = \frac{1-2y}{x}$



Which of the following must be true?

- (A) $\theta = 30^\circ$
 (B) $\sin \theta = 3 \sin 10^\circ$
 (C) $\sin \theta = \frac{\sin 10^\circ}{3}$
 (D) $\cos \theta = \frac{1}{3}$

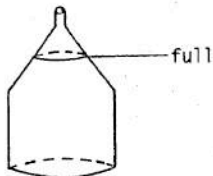
36. P is directly proportional to T and inversely proportional to V . Then

(a) $P = kVT$ (b) $P = \frac{kV}{T}$ (c) $P = \frac{kT}{V}$ (d) $PVT = k$

37. Two dice are tossed and only the higher number on the upper faces is recorded. The probability that the number recorded is 5 is

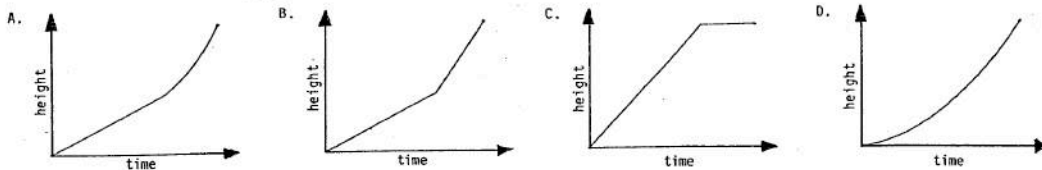
(a) $\frac{1}{6}$ (b) $\frac{1}{9}$ (c) $\frac{5}{36}$ (d) $\frac{1}{4}$

38.



Water is to be poured at a constant rate into this empty bottle until it reaches the 'full' mark shown.

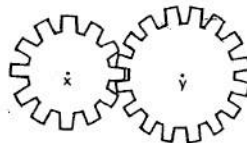
Which graph best represents the height of the water as the bottle fills?



39.

Wheel X has 12 teeth and wheel Y has 16 teeth. When X turns through 20 revolutions, how many revolutions does Y turn through?

- A 15
- B 20
- C $26\frac{2}{3}$
- D neither A, nor B, nor C



40. When playing darts the probabilities of Frank and Sophie hitting the bullseye on the first throw are $\frac{1}{3}$ and $\frac{1}{5}$ respectively.

The probability that Frank misses and Sophie hits the bullseye on the first throw is

- A. $\frac{1}{15}$
- B. $\frac{2}{15}$
- C. $\frac{8}{15}$
- D. $\frac{13}{15}$

!!! END !!!

NAME: ANSWERS.

CLASS:

C 1 (A) (B) (C) (D)

C 2 (A) (B) (C) (D)

D 3 (A) (B) (C) (D)

D 4 (A) (B) (C) (D)

D 5 (A) (B) (C) (D)

C 6 (A) (B) (C) (D)

B 7 (A) (B) (C) (D)

C 8 (A) (B) (C) (D)

D 9 (A) (B) (C) (D)

C 10 (A) (B) (C) (D)

D 11 (A) (B) (C) (D)

A 12 (A) (B) (C) (D)

B 13 (A) (B) (C) (D)

D 14 (A) (B) (C) (D)

A 15 (A) (B) (C) (D)

A 16 (A) (B) (C) (D)

B 17 (A) (B) (C) (D)

A 18 (A) (B) (C) (D)

D 19 (A) (B) (C) (D)

A 20 (A) (B) (C) (D)

A 21 (A) (B) (C) (D)

B 22 (A) (B) (C) (D)

A 23 (A) (B) (C) (D)

D 24 (A) (B) (C) (D)

B 25 (A) (B) (C) (D)

B 26 (A) (B) (C) (D)

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C 36 (A) (B) (C) (D)

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A 38 (A) (B) (C) (D)

A 39 (A) (B) (C) (D)

B 40 (A) (B) (C) (D)