YANGON UNIVERSITY OF ECONOMICS

DEPARTMENT OF MANAGEMENT STUDIES

PRELIMINARY GMAT COURSE

Numerical Skill

1. Problem Solving

1. If $x + y = 12$ and $x^2 + y^2 = 126$, then xy =

(A) 9 (B)10 (C) 11 (D) 13 (E) 16

2. A drought decreased the amount of water in city X's reservoirs from 118 million gallons to 96 million gallons. If the reservoirs were at 79 percent of total capacity before the drought began, approximately how many million gallons were the reservoirs below total capacity after the drought?

(A) 67 (B) 58 (C) 54 (D) 46 (E) 32

3. Youssef lives x blocks from his office. It takes him 1 minute per block to walk to work and 20 seconds per block to ride his bicycle to work. If it takes him exactly 10 minutes more to walk to work than to ride his bicycle, then x equals

(A) 4 B) 7 C) 10 D) 15 E) 20

4. A book club rented the party room of a local restaurant to meet and discuss its current novel over dinner. The total charge, including food and service, was $867.50. If each member of the club paid at least $42, then what is the greatest possible number of members in the club?

(A) 19 (B) 20 C) 21 D) 23 E) 25

5. A machine manufactures notebooks in a series of five colors: red, blue, black, white, and yellow. After producing a notebook of one color from that series, it produces a notebook of the next color. Once five are produced, the machine repeats the same pattern. If the machine began a day producing a red notebook and completed the day by producing a black notebook, how many notebooks could have been produced that day?

A) 27 B) 34 C) 50 D) 61 E) 78

6. If $4x + y = 8$ and $y - 3x = 7$, then what is the value of $x + 2y$?

A) 1/10 B) 3 C) 15 D) 52/7 E) 60/7

7. A team won 50 percent of its first 60 games in a particular season, and 80 percent of its remaining games. If the team won a total of 60 percent of its games that season, what was the total number of games that the team played?

A) 180 B) 120 C) 90 D) 85 E) 30

8. Company Z spent 1/4 of its revenues last year on marketing and 1/7 of the remainder on maintenance of its facilities. What fraction of last year's original revenues did company Z have left after its marketing and maintenance expenditures?

A) 5/14 B)1/2 C) 17/28 D) 9/14 E) 9/11

$P = \frac{R}{C}$

$R = P \times C$

9. In 1998 the profits of company N were 10 percent of revenues. In 1999, the revenues of company N fell by 20 percent, but profits were 15 percent of revenues. The profits in 1999 were what percent of the profits in 1998?

A) 80% B) 105% C) 120% D) 124.2% E) 138%

10. If a bicyclist in motion increases his speed by 30 percent and then increases this speed by 10 percent, what percent of the original speed is the total increase in speed?

A) 10% B) 40% C) 43% D) 64% E) 140%

11. Jane makes toy bears. When she works with an assistant, she makes 80 percent more bears per week and works 10 percent fewer hours each week. Having an assistant increases Jane's output of toy bears per hour by what percent?

A) 20% B) 80% C) 100% D) 180% E) 200%

12. A loan of $150 is made at a simple annual interest rate of 12 percent. The amount that the borrower owes at the end of 10 months is

(A) $3 (B) $15 (C) $18 (D) $165 (E) $168

13. If a and b are odd integers, which of the following must be an even integer?

A) $a(b-2)$ B) $ab+4$ C) $(a+2)(b-4)$ D) $3a+5b$ E) $a(a+6)$

14. At a certain zoo, the ratio of sea lions to penguins is 4 to 11. If there are 84 more penguins than sea lions at the zoo, how many sea lions are there?

A) 24 B) 36 C) 48 D) 72 E) 132

15. A teacher grades students' tests by subtracting twice the number of incorrect responses from the number of correct responses. If student A answers each of the 100 questions on her test and receives a score of 73, how many questions did Student A answer correctly?

A) 55 B) 60 C) 73 D) 82 E) 91

16. One used-car salesperson receives a commission of $200 plus 4 percent of $1,000 less than the car's final sale price. Another car salesperson earns a straight commission of 6 percent of the car's final sale price. What is the final sale price of a car if both salespeople would earn the same commission for selling it?

A) $5,000 B) $6,000 C) $8,000 D) $10,000 E) $12,000

17. The number x of cars sold each week varies with the price y in dollars according to the equation $x = 800{,}000 - 50y$. What would be the total weekly revenue, in dollars, from the sale of cars priced at $15,000?

(A) 50,000 (B) 750,000 (C) 850,000 (D) 7,500,000 (E) 750,000,000

18. If $\sqrt{x+1} = 3$, then $(x-3)^2 =$

(A) 3 (B) 6 (C) 25 (D) 10 (E) 16

19. If $x^2 - 2x - 15 = (x+r)(x+s)$ for all values of x, and if r and s are constants, then which of the following is a possible value of $r - s$?

A) 8 B) 2 C) −2 D) −3 E) −5

20. A theater charges \$12 for seats in the orchestra and \$8 for seats in the balcony. On a certain night, a total of 350 tickets were sold for a total cost of \$3,320. How many more tickets were sold that night for seats in the balcony than for seats in the orchestra?

A) 90 B) 110 C) 120 D) 130 E) 220

21. If x is an integer and 2.134×10^x is less than 210,000, what is the greatest possible value for x?

A) 7 B) 6 C) 5 D) 4 E) 3

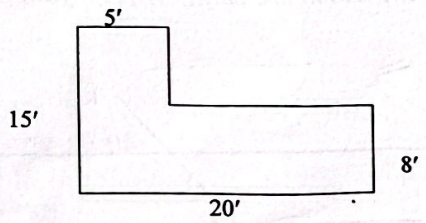
22. How many integer values are there for x such that $1 < 3x + 5 < 17$?

A) Two B) Three C) Four D) Five E) Six

23. Three investors, A, B, and C, divide the profits from a business enterprise in the ratio of 5:7:8, respectively. If investor A earned \$3,500, how much money did investors B and C earn in total?

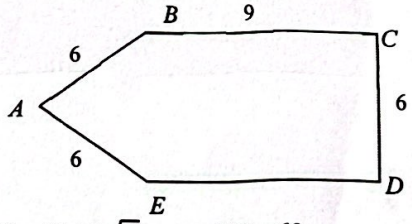
A) \$4,000 B) \$4,900 C) \$5,600 D) \$9,500 E) \$10,500

24. How many square feet of carpeting are needed to cover the area pictured below?



(A) 131 (B) 145 (C) 155 (D) 195 (E) 300

25. What is the area of the figure *ABCDE*?



(A) 54 (B) $54+9\sqrt{3}$ (C) 63 (D) $54+15\sqrt{5}$ (E) 90

26. $7^b + 7^b + 7^b + 7^b + 7^b + 7^b + 7^b =$

(A) 7^b (B) 7^{b+1} (C) 7^{7b} (D) 8^b (E) 48^b

27. A room measures 13 feet by 26 feet. A rug which measures 12 feet by 18 feet is placed on the floor. What is the area of the uncovered portion of the floor?

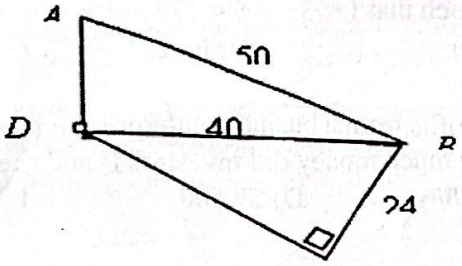
(A) 554 sq.ft. (B) 216 sq.ft. (C) 100 sq.ft. (D) 122 sq.ft. (E) 338 sq.ft.

28. Machine A produces 1000 widgets in 5 hours. Machine B produces 450 widgets in 3 hours. While working together at their respective rates, how long will it take the machines to produce 2000 widgets?

(A) $4\frac{4}{9}$ hours (B) 5 hours (C) $5\frac{9}{20}$ hours (D) $5\frac{5}{7}$ hours (E) 6 hours

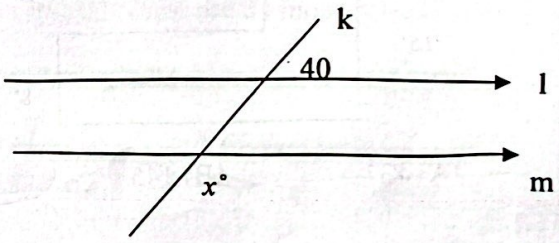
29. What is the perimeter of quadrilateral ABCD below?

(A) 106 (B) 114 (C) 120 (D) 127 (E) 136



30. In the figure shown (not drawn to scale) the lines l and m are parallel. Then $x =$

(A) 140 (B) 120 (C) 70
(D) 50 (E) 40



Numerical skills

(1) $x+y=12$ / $x^2+y^2=126$, $xy=?$

$$(x+y)^2=12^2$$
$$x^2+2xy+y^2=144$$
$$(x^2+y^2)+2xy=144$$
$$\Downarrow$$
$$126+2xy=144$$
$$2xy=144-126$$
$$2xy=18$$
$$\therefore xy=\frac{18}{2}=9 \Leftarrow \text{Ans;}$$

(2) 79% of total capicity = 118 million gallons

100% ——— = ?

$$=\frac{100}{79}\times 118$$

= 149.36 gallons. (Total capicity မလျှော့ခင်ကြီး)

= 149 - 96 gallons (လျော့ကျသွားတဲ့ပမာဏ)

Ans; ⇒ = 53 gallons.

(3) Walk ⇒ 1 min / block

Bicycle ⇒ 20 s / block.

($\frac{1}{3}$ min / block)

walk = x block (1min)

Bicycle = $x/3$ block. (20s)

x block လျှောက်ဖို့ လမ်းကို 10 min ပိုကြာနေရင် (ရထားမဲ့ဆိုရင်)

$$x-\frac{x}{3}=10$$

$$\frac{3x-x}{3}=10$$

$$\frac{2x}{3}=10$$

$2x = 30$

$\Rightarrow x = 30/2 = 15$ blocks

④ Total charge $= \$867.50$

each member paid $= \$42$

members $= ?$

$$= \frac{867.50}{42}$$

$= 20 \Leftarrow$ Ans:

⑤ 5 series = R, B, (Black), white, yellow

၅ ကြိမ် တစ်ပတ်စီ ထုတ်

Black မှာ [illegible] သွားတယ် ဆိုရင် [illegible] ဖြစ်လဲ.

(၅ ကြိမ်ပြည့် [illegible] + ၃ ကြိမ်(ပေါင်း)တဲ့ ဂဏန်း? ပဲ

$5\times1, 5\times2, 5\times3, 5\times4, 5\times5, 5\times6, 5\times7, 5\times8, 5\times9, 5\times10, 5\times11, 5\times12, 5\times13, 5\times14, (5\times15)$] $+3 \Rightarrow (78) \Leftarrow$

⑥ $4x + y = 8$, $y - 3x = 7$, $x + 2y = ?$

$y - 3x = 7$

$(y = 7 + 3x)$ — ①

$4x + y = 8$

$4x + 7 + 3x = 8$

$7x + 7 = 8$

$7x = 8 - 7$

$7x = 1$

$x = 1/7$ — ②

$= x + 2y$

$= 1/7 + 2(7 + 3x)$

$= 1/7 + 14 + 6x$

$= 1/7 + 14 + 6/7$

$$= \frac{1 + 98 + 6}{7}$$

$= (15) \Leftarrow$ Ans:

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09. 7830767774.

(7) Total no of games = G

50% of 1st 60 games won = 30 games

remaing Games = (G - 60)

80% of remaing gams won = 0.8 (G - 60)

60% of Total game won = 0.6 G

1st 60 games (won) (remaing Games) Total no of gams won

$30 + 0.8(G - 60) = 0.6G$

$30 + 0.8G - 48 = 0.6G$

$0.8G - 0.6G = 48 - 30$

$0.2G = 18$

$G = \frac{18}{0.2} = \frac{180}{20} = 90$

(8) Revenues = R

Marketing $= \frac{1}{4} \times R = \frac{R}{4}$.

Remainder $= R - \frac{R}{4} = \frac{4R - R}{4} = \frac{3R}{4}$

For maintenance $= \frac{1}{7}$ of remainder

$= \frac{1}{7} \times \frac{3R}{4} = \frac{3R}{28}$

Fraction of orignal revenues % = ~~mys~~ - For maintenance

$= \frac{3R}{4} - \frac{3R}{28}$

$= \frac{21R}{28} - \frac{3R}{28}$

$= \frac{18}{28} R$

$= \frac{9}{14} R$

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⑨ Revenues = R , % of profit 1999 / % of profit 1998 = ?

In 1998

Revenue = 100 %.

profit = 10

In 99 (20 % profit)

Revenue = 100 − 20 = 80 %.

Profit = 12

profit %) (1999)	profit 10	———	Revenue 100 %.
profit %) (1998)	profit 12	———	?

$= \frac{12}{10} \times 100\ \%$

$= 12 \times 10 = 120\ \%$ ⇐

⑩ original speed = 100 %.

Increased speed = 20 % of original increasd speed

=

Total speed = original speed + increased speed.

= 90 +

⑩ Original speed = 100 %.

1st increased speed = 30 % → 130 increased.

2nd increasd sped = 10% 1st increasd speed ×

= 13

Total final speed = 130 + 13 = 143 %.

$\frac{\text{Total speed}}{\text{original speed}} = \frac{143\ \%}{100\ \%} = 43\ \%$ ⇐