Math Test Series

1. 27, 499 round to the nearest hundred is _____?

a. 27, 400
b. 27, 500
c. 27, 000
d. 28, 000

_____2. Twenty-four weeks is how many days?

a. 140
b. 168
c. 176
d. 196

_____3. Five hundred ninety-five days is how many weeks?

a. 119
b. 95
c. 85
d. 75

_____4. Eighteen bus loads of 56 students each went to join the Independence Day Celebration. One hundred seventy-four did not go. How many students are there in all?

a. 160
b. 1282
c. 180
d. 1182

_____5. Richard bowled 3 games and got scores of 139, 153, and 128. What was his average score for the threegames?

a. 130
b. 140
c. 150
d. 160

_6. What time will it be 3 and 1/2 hours after 7:15 PM?

a. 3:45 AM
b. 10:45 AM
c. 3:45 PM
d. 10:45 PM

_____7. What time was it 3 and 1/2 hours before 7:15 AM?

a. 3:45 AM
b. 10:45 AM
c. 3:45 PM
d. 10:45 PM

_____8. The fraction 52 / 91 expressed in lowest term is _____?

a. 4/7
b. 2/3
c. 3/7
d. 7/13

_____9. Car A averages 8 km per liter of fuel. Car B averages 12 km per liter of fuel. If the price of fuel is $10 per liter. How much less would a 600 - km. trip cost for Car A than for Car B?

a. $ 250
b. $ 500
c. $ 600
d. $ 750

a.
14 and 1/17
b. 4 and 1/17
c. 2 and 3/7
d. 1 and 14/17

_____11. 40 is what part of 64?

a. 7/8
b. 3/8
c. 5/8
d. 1 and 3/5

_____12. Change 13 3/7 to an improper fraction.

a. 91/7
b. 39/7
c. 273/7
d. 94/7

_____13. What is the average speed in kph of a car travelling 160 kilometers in 5 hours?

a. 32
b. 40
c. 80
d. 90

14. $\frac{3}{4} + \frac{1}{6} + \frac{1}{8}$ = _____?

a. 5/8
b. 1 and 1/24
c. 1/16
d. 3/8

15. $15\frac{1}{3} - 8\frac{3}{4}$ = _____?

a. 6 and 7/12
b. 7 and 2/3
c. 8 and 2/7
d. 7 and 2/7

16. 8 inches is what part of a foot?

a. 2/3
b. 7/12
c. 4/5
d. 5/6

17. If 4 workers can complete 8 identical jobs in 4 days, how long will it take 6 workers to complete 12 such jobs?

a. 3 days
b. 4 days
c. 5 days
d. 6 days

_18. A bookstore sells two kind of MSA Reviewer Books. "College Admission Test Reviewer (CATR)" and High School Entrance Test Reviewer (HSETR)". If it sells the CATR which yield a profit of $62.00 per book, and it can sell 300 books in a month. It sells the HSETR at a profit of $50.50 per book and it can sell 350 books in one month.Which type of book will yield more profit per month, and by how much?

a. The HSETR will yield a greater profit by $ 925.
b. The CATR will yield a greater profit by $ 925.
c. Both books will yield exactly the same profit
d. The CATR will yield a greater profit by $ 1150.

_____19. Mr. Jose Suobiron inherited 5/8 of his father's estate. He sold 2/5 of his share. What part of the entire estate did he sell?

a. 1/2
b. 1/4
c. 2/5
d. 3/8

_____20. 13 and 1/3 ounces is what part of a pound?

(16 ounces = 1 pound)

a. 2/3
b. 5/6
c. 3/4
d. 7/8

_____21. 126 is 3/7 of what number?

a. 54
b. 84
c. 119
d. 294

_____22. A roll of ribbon 51 yards long is to be divided into 408 equal parts. How many inches is the length of each part?

a. 3.5
b. 4.5
c. 5.5
d. 6.5

_____23. A water tank is 7/8 full. When 21 liters of water is drawn out, the tank is 5/8 full. What is the total capacity of the tank in liters?

a. 63
b. 84
c. 87
d. 93

_____24. A painter completes 2/9 of a job in 3 days. At this rate, how many more days will it take him to finishthe job?

a. 7.5 days
b. 9.5 days
c. 10.5 days
d. 13.5 days

25. A boy spent $320, which was 5/7 of what he had originally. How much did he have originally?

a. $ 438
b. $ 448
c. $ 476
d. $ 576

_____26. 0.0075 x 1000 = _____?

a. 0.075
b. 0.75
c. 7.5
d. 75

_____27. Express 0.572 as a common fraction in lowest term?

a. 71.5 / 125
b. 35.75 / 62.5
c. 14 / 25
d. 143 / 250

_____28. Of the following which is the closest approximation to the product 0.33 x 0.41 x 0.625 x 0.83 = _____?

a. 3/8
b. 3/4
c. 6/41
d. 5/72

29. Dividing by 0.125 is the same as multiplying by _____?

a. 3/8
b. 1/4
c. 1/8
d. 8

_____30. If a copper wire is 3.7 feet long, its length in inches is _____?

a. less than 40
b. between 40 and 44
c. between 44 and 45
d. more than 45

_____31. $\frac{9}{0.09 \times 0.9}$ = _____?

a. 9/1000
b. 9/100
c. 100/9
d. 1000/9

_____32. How much money can be saved by buying 72 pens at $90 per dozen than buying them for $7.75 each?

a. $ 0.25
b. $ 3.00
c. $ 12.00
d. $ 18.00

33. Two countries produce 1/8 and 3/10 respectively of the world production of aluminum. What fraction of the world production do the two nations produce together?

a. 7/40
b. 3/40
c. 17/40
d. 21/40

_____34. Of 20 is 25 % of x + 7, then x = _____?

a. 73
b. 80
c. 87
d. 93

_____35. If 5 x 5 x Z = 15 x 15 x 15, then Z = _____?

a. 45
b. 30
c. 105
d. 135

_____36. The morning class in school begin at 8:05 AM and end at 12:00 noon. There are five class periods of 45 minutes each with equal intervals between classes. How many minutes are there in each interval?

a. 2
b. 2.5
c. 3
d. 4.5

37. Every seat in a bus was taken and 7 people were standing. At the next stop 15 people got off and 3 got on. How many seats were empty after this stop if everyone was seated?

a. 3
b. 5
c. 7
d. 10

_____38. A boy scored 134, 145, and 150 in his first 3 games. What score must he make on his next game so that his average for the four games will be 149?

a. 163
b. 165
c. 167
d. 170

_____39. Angelo can type 9 pages in 12 minutes. How many pages can he type in 8 hours at the same rate?

a. 180
b. 360
c. 390
d. 540

_____40. Girlie starts cleaning the yard at 10 AM and by 11:20, she has finished 4/5 of it. If she continues working at the same rate, at what time will she finish cleaning the yard?

a. 11 : 10 AM
b. 12 : 20 AM
c. 11 : 40 AM
d. 11 : 52 AM

41. If 3/8 of a certain number is 2/5, what is 3/4 of that same number?

a. 1/5
b. 2/5
c. 3/5
d. 4/5

_____42. A bus travels 240 kilometers at 60 kph and then returns at 40 kph. What is the average speed in kilometers per hour for the round trip?

a. 48
b. 49
c. 50
d. 52

_____43. Mr. Albelda drives his car at the rate of 60 miles per hour. What is his rate in feet per second?

a. 66
b. 76
c. 86
d. 88

_____44. What is 0.05 percent of 6.5 ?

a. 0.00325
b. 0.0325
c. 0.325
d. 3.25

_____45. At Rosa Alvero Street, in Loyola Heights there are 8 towns houses and 52 private individual homes. What is the ratio of town houses to private individual homes?

a. 2 : 27
b. 2 : 13
c. 1 : 13
d. 4 : 13

_46. If it takes 16 pipes 10 hours to fill 8 tanks, how long will it take 12 pipes to fill 9 tanks?

a. 10 hours
b. 12 hours
c. 13 hours
d. 15 hours

_____47. Mr. Cruz borrows $360,000. If he pays back $378,000 after one year, what is his interest rate?

a. 1.5%
b. 4.5%
c. 5%
d. 7.5%

---

48. If 6 men need $3,600 worth of food for a three-day camping trip, how much will 2 men need for a 15-day trip?

a. $ 3, 600
b. $ 4, 800
c. $ 5, 400
d. $ 6, 000

_____49. What is 6% of 2.5 ?

a. 5/3 %
b. 15
c. 3/20
d. 3/5

_____50. What is the value of 60 x 31 x 36 x 7 ?

a. 468, 720
b. 468, 721
c. 468, 722
d. 468, 723

MATH TEST 002 ANSWERS AND EXPLANATIONS

1. 27, 499 round to the nearest hundred is _____?

= 27, 499 ---> drop 99 and change it to 00 and add 1 to the next digit which is 4 since 99 is more than 50.

Therefore **27,500 is the answer. *Ans.**

---

2. Twenty-four weeks is how many days?

$= 24 \text{ ~~weeks~~} \times \frac{7 \text{ days}}{\text{~~weeks~~}}$

= 24 x 7 days

= 168 days *Ans.

---

3. Five hundred ninety-five days is how many weeks?

$= 595 \text{ ~~days~~} \times \frac{1 \text{ week}}{7 \text{ ~~days~~}}$

$= \frac{595}{7}$ week

= 85 weeks *Ans.

---

4. Eighteen bus loads of 56 students each went to join the Independence Day Celebration. One hundred seventy-four did not go. How many students are there in all?

Number of students :

N = (18 x 56) + 174

= 1008 (174)

= 1182 students *Ans.

---

5. Richard bowled 3 games and got scores of 139, 153, and 128. What was his average score for the three games?

$$\text{Average} = \frac{139 + 153 + 128}{3}$$

$$= \frac{420}{3}$$

= 140 *Ans.

6. What time will it be 3 and 1/2 hours after 7:15 PM?

= 7:15 + 3:30

= 10: 45 PM *Ans.

---

7. What time was it 3 and 1/2 hours before 7:15 AM?

7:15 - 3:30

Since :15 minutes (7:15) is less than :30 minutes (3:30) you need to borrow an hour to 7 and convert that to minutes. 1 hour = 60 minutes. Now :15 + :60 = 75 minutes.

7:15 is now 6:75

6:75 - 3:30 = **3:45 AM *Ans.**

---

8. The fraction 52 / 91 expressed in lowest term is _____?

$$\frac{52}{91} = \frac{52 \ / \ 13}{91 \ / \ 13}$$

$= \frac{4}{7}$ *Ans.

---

9. Car A averages 8 km per liter of fuel. Car B averages 12 km per liter of fuel. If the price of fuel is $10 per liter.How much less would a 600 - km. trip cost for Car A than for Car B?

CAR A :

$$\frac{600 \text{ km}}{8 \text{ km}} \times \$10 = \$750$$

CAR B :

$\frac{600 \text{ km}}{12 \text{ km}}$ x \$10 = \$500

\$750 - \$500 = **\$250 *Ans.**

10. Change 31/17 to a mixed number.

```
       1
17 /  31
      17
      14
```

therefore, the mixed number is 1 $\frac{14}{17}$ *Ans.

---

11. 40 is what part of 64?

Part = $\frac{40}{64}$

= $\frac{40 / 8}{64 / 8}$

= $\frac{5}{8}$ *Ans.

---

12. Change 13 $\frac{3}{7}$ to an improper fraction.

Just multiply 7 to 13 then add 3 and over it by 7.

7 x 13 = 91 + 3 = **94 / 7 *Ans.**

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13. What is the average speed in kph of a car travelling 160 kilometers in 5 hours?

Ave. Speed = $\frac{\text{distance}}{\text{time}}$

= $\frac{160 \text{ km}}{5 \text{ hrs.}}$

= 32 kph *Ans.

14. $\frac{3}{4} + \frac{1}{6} + \frac{1}{8}$ = ___________?

= $\frac{18}{24} + \frac{4}{24} + \frac{3}{24}$

= $\frac{25}{}$

24

= 1 1/24 *Ans.

---

15. $15\frac{1}{3} - 8\frac{3}{4} =$ _____?

15 and 1/3 is also = 46/3
8 and 3/4 is also = 35/4

$= \frac{46}{3} - \frac{35}{4}$

$= \frac{4(46) - 3(35)}{3(4)}$

$= \frac{184 - 105}{12}$

$= \frac{79}{12}$

= 6 7/12 *Ans.

---

16. 8 inches is what part of a foot?

1 FOOT = 12 INCHES

8 inches = 8 ~~inches~~ x $\frac{1 \text{ foot}}{12 \text{ ~~inches~~}}$

= $\frac{8}{12}$ ft.

= 2/3 ft. *Ans.

---

17. If 4 workers can complete 8 identical jobs in 4 days, how long will it take 6 workers to complete 12 such jobs?

k = $\frac{(4 \text{ workers}) 4 \text{ days}}{8 \text{ jobs}}$

k = $\frac{2 \text{ workers days}}{\text{job}}$

No. of days for 12 jobs for 6 workers

N = $\frac{2 \text{ ~~worker~~ days}}{\text{~~job~~}} \times \frac{12 \text{ ~~jobs~~}}{6 \text{ ~~workers~~}}$

N = 4 days *Ans.

18. A bookstore sells two kind of MSA Reviewer Books. "College Admission Test Reviewer (CATR)" and High SchoolEntrance Test Reviewer (HSETR)". If it sells the CATR which yield a profit of $62.00 per book, and it can sell 300 books in a month. It sells the HSETR at a profit of $50.50 per book and it can sell 350 books in one month. Which type of book will yield more profit per month, and by how much?

CATR

$$\text{Profit} = \frac{\$62}{\text{book}} \times 300 \text{ books}$$

$$= \$18{,}600$$

HSETR

$$\text{Profit} = \frac{\$50.50}{\text{book}} \times 300 \text{ books}$$

$$= \$17{,}675$$

Difference in Profit = $18,600 - $17,675

= $925 *Ans.

therefore the CATR yield $925 more profit than the HSETR

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19. Mr. Jose Suobiron inherited 5/8 of his father's estate. He sold 2/5 of his share. What part of the entire estate did he sell?

Let x - represents the whole state.

$\frac{5}{8}$ x - is the share of Mr. Suobiron

N = part of the estate that he sold

$$N = \frac{5}{8} \times \frac{2}{5}$$

$$= 10 / 40$$

= 1/4 of the estate was sold by Mr. Suobiron *Ans.

---

20. 13 and 1/3 ounces is what part of a pound?

16 OUNCES = 1 POUND

$$= 13 \frac{1}{3} \text{ ounces} \times \frac{1 \text{ pound}}{\text{ounces}}$$

$= \frac{40}{3} \times \frac{1}{16}$ pounds

= 5 / 6 pounds *Ans.

21. 126 is 3/7 of what number?

$\frac{3}{7}N = 126$

$N = 126 \left(\frac{7}{3}\right)$

$N = 882 / 3$

N = 294 *Ans.

---

22. A roll of ribbon 51 yards long is to be divided into 408 equal parts. How many inches is the length of each part?

1 YARD = 36 INCHES

$N = 51 \text{ ~~yards~~} \times \frac{36 \text{ inches}}{\text{~~yards~~}} \div 408 \text{ parts}$

$= 51 \times 36 \times \frac{1}{408}$ inches/part

= 4.5 inches / part *Ans.

---

23. A water tank is 7/8 full. When 21 liters of water is drawn out, the tank is 5/8 full. What is the total capacity of the tank in liters?

Let x - be the total capacity of the tank.

$\frac{7}{8}x - 21 = \frac{5}{8}x$

$\frac{7}{8}x - \frac{5}{8}x = 21$

$\frac{2}{8}x = 21$

$\frac{1}{4}x = 21$

$x = 21 \left(\frac{4}{1}\right)$

$x = 21(4)$

x = 84 *Ans.

24. A painter completes 2/9 of a job in 3 days. At this rate, how many more days will it take him to finish the job?

Let x - be the remaining of days to finish the job.

$\frac{2}{9} : 3 = \frac{7}{9} : x$

$\frac{7}{}$ is part of the job that is unfinished.

$1 - \frac{2}{9} = \frac{7}{9}$

$\frac{2}{9} x = 3(\frac{7}{9})$

$\frac{2}{9} x = \frac{21}{9}$

$x = \frac{21}{\cancel{9}} (\frac{\cancel{9}}{2})$

$x = \frac{21}{2}$

x = 10.5 days *Ans.

25. A boy spent $320, which was 5/7 of what he had originally. How much did he have originally?

Let x - be the original amount of money that the boy had first.

$\frac{5}{7} x = \$320$

$x = 320 (\frac{7}{5})$

x = $448 *Ans.

---

26. 0.0075 x 1000 = _____?

To multiply numbers by 10^n, move the decimal point of the number to n places to the right.

$0.0075 \times 1000 = 0.0075 \times 10^3$ n = 3 this represents the no. of zero decimals : move the decimal point 3 places to the right.

= 7.5 *Ans

---

27. Express 0.572 as a common fraction in lowest term?

$0.572 = \frac{527}{1000}$ 0.572 - this has 3 decimal places remove the decimal point and replace it by the denominator of $10^3 = 1000$.

$= \frac{572 / 4}{1000 / 4}$

= 143 *Ans.
250

---

28. Of the following which is the closest approximation to the product 0.33 x 0.41 x 0.625 x 0.83 = _____?

0.33 = 1/3
0.41 = 2/5
0.625 = 5/8
0.83 = 5/6

$= \frac{1 \times 2 \times 5 \times 5}{3 \times 5 \times 8 \times 6}$

$= \frac{50}{720}$

= 5 / 72 *Ans.

29. Dividing by 0.125 is the same as multiplying by _____?

$= \frac{1}{0.125}$

$= \frac{1}{\frac{1}{8}}$

$= 1 \times \frac{8}{1}$

= 8 *Ans.

---

30. If a copper wire is 3.7 feet long, its length in inches is _____?

$3.7 \text{ feet} = 3.7 \text{ feet} \times \frac{12 \text{ inches}}{\text{foot}}$

44.4 inches *Ans.

44.4 inches is between 44 and 45

---

31. $\frac{9}{0.09 \times 0.9}$ = _____?

$= \frac{9}{\frac{9}{100} \times \frac{9}{10}}$

$= \frac{9}{\frac{81}{1000}}$

$= 9 \times \frac{1000}{}$

= 1000 *Ans.
9

---

32. How much money can be saved by buying 72 pens at $90 per dozen than buying them for $7.75 each?

Cost in buying by dozen :

= 72 ~~pens~~ x 1 ~~dozen~~ x $90
12 ~~pens~~ ~~doz.~~

= 6 x $90

= $540

Cost in buying per piece :

= 72 x $7.75

= 558

Amount Saved = $558 - $540
= $18 *Ans.

33. Two countries produce 1/8 and 3/10 respectively of the world production of aluminum. What fraction of the world production do the two nations produce together?

N = 1/8 + 3/10

= 5/40 + 12/40

= 17/40 *Ans

---

34. Of 20 is 25 % of x + 7, then x = _____?

25 % (x + 7) = 20

1/4 (x + 7) = 20

x + 7 = 20 x 4

x + 7 = 80

x = 80 - 7

x = 73 *Ans.

---

35. If 5 x 5 x Z = 15 x 15 x 15, then Z = _____?

5 x 5 x Z = 15 x 15 x 15

$$Z = \frac{15 \times 15 \times 15}{5 \times 5}$$

Z = 3 x 3 x 15

Z = 135 *Ans.

---

36. The morning class in school begin at 8:05 AM and end at 12:00 noon. There are five class periods of 45 minutes each with equal intervals between classes. How many minutes are there in each interval?

Let x - be the length of time of each interval

8: 05 AM + : 45 min-class + x + :45 min-class + x + :45 min-class + x + :45 min-class + x + :45 min-class = 12:00

8:05 + 5(45 minutes) + 4x = 12:00

8:05 + 225 minutes + 4x = 12:00

8:05 + 3 hrs& 45 min + 4x = 12:00

11:50 + 4x = 12:00

4x = 10 minutes

x = 10 / 4

x = 2.5 minutes *Ans.

37. Every seat in a bus was taken and 7 people were standing. At the next stop 15 people got off and 3 got on. How many seats were empty after this stop if everyone was seated?

Let x - be the number of seats

No. of people = x + 7 -15 + 3 No. of empty seats = x - (x - 5)
No. of people = x - 5 No. of empty seats = x - x + 5

No. of seats = 5 *Ans.

---

38. A boy scored 134, 145, and 150 in his first 3 games. What score must he make on his next game so that his average for the four games will be 149?

x - must be score in the fourth game

$$\frac{x + 134 + 150 + 145}{4} = 149$$

x + 429 = 4 (149)

x + 429 = 596

x = 596 - 429

x = 167 *Ans.

---

39. Angelo can type 9 pages in 12 minutes. How many pages can he type in 8 hours at the same rate?

P - no. of pages :

$$\frac{P}{8\text{ hrs}} \times \frac{1\text{ hr}}{60\text{ mins}} = \frac{9\text{ pages}}{12\text{ mins}}$$

$$\frac{P}{480} = \frac{9}{12}$$

$$P = \frac{9}{12}(480)$$

$$= 9(40)$$

360 *Ans.

---

40. Girlie starts cleaning the yard at 10 AM and by 11:20, she has finished 4/5 of it. If she continues working at the same rate, at what time will she finish cleaning the yard?

Time elapse from 10 AM to 11:20 AM is 1 hour and 20 minutes which is = 80 minutes.

$$\frac{4}{5} : 80\text{ minutes} = \frac{1}{5} : x$$

$$\frac{4}{5}x = 80\left(\frac{1}{5}\right)$$

$$x = 80\left(\frac{1}{5}\right)\frac{5}{4}$$

$$= 20\text{ minutes}$$

therefore, 20 minutes after 11:20 AM is 11:40 AM *Ans.

41. If 3/8 of a certain number is 2/5, what is 3/4 of that same number?

$$\frac{3}{8}x = \frac{2}{5}$$

$$x = \frac{2}{5}\left(\frac{8}{3}\right)$$

$$x = \frac{16}{15}$$

$$\frac{3}{4}x = \frac{3}{4}\left(\frac{16}{15}\right)$$

3/4 x = 4/5 *Ans.

---

42. A bus travels 240 kilometers at 60 kph and then returns at 40 kph. What is the average speed in kilometers per hour for the round trip?

t1 = distance / rate
= 240 km / 60 kph
= 4 hrs.

t2 = distance / rate
= 240 km / 40 kph
= 6 hrs.

$$\text{rate} = \frac{\text{total distance}}{\text{total time}}$$

$$= \frac{240 + 240}{4 + 6}$$

$$= \frac{480}{10}$$

= 48 km/hr *Ans.

---

43. Mr. Albelda drives his car at the rate of 60 miles per hour. What is his rate in feet per second?

5280 ft. = 1 mile

$$\text{rate} = 60 \frac{\text{mi}}{\text{hr}} \times \frac{1 \text{ hr}}{3600 \text{ sec}} \times \frac{5280 \text{ ft}}{1 \text{ mile}}$$

$$= \frac{60 (5280)}{3600} \frac{\text{ft}}{\text{sec}}$$

= 88 ft/sec *Ans.

---

44. What is 0.05 percent of 6.5 ?

= 0.05% x 6.5

= 0.0005 x 6.5

= 0.00325 * Ans.

---

45. At Rosa Alvero Street, in Loyola Heights there are 8 towns houses and 52 private individual homes. What is the ratio of town houses to private individual homes?

$$\frac{8}{52} = \frac{8 / 4}{52 / 4}$$

= 2 / 13 or 2 : 13 * Ans.

46. If it takes 16 pipes 10 hours to fill 8 tanks, how long will it take 12 pipes to fill 9 tanks?

Let H be the number of hours

$$H = \frac{(16)(10)}{8} \frac{\text{pipe - hours}}{\text{tanks}} \times \frac{9 \text{ tanks}}{12 \text{ pipes}}$$

$$= \frac{16 \times 10 \times 9}{8 \times 12}$$

$$= \frac{1440}{96}$$

= 15 hours *Ans.

---

47. Mr. Cruz borrows $360,000. If he pays back $378,000 after one year, what is his interest rate?

I = F - P

I = $378,000 - $360,000 = 18,000

$$\text{rate} = \frac{I}{Pt} \times 100\%$$

$$= \frac{\$18,000}{\$360,000} \times 100\%$$

= 5% *Ans.

---

48. If 6 men need $3,600 worth of food for a three-day camping trip, how much will 2 men need for a 15-day trip?

Let x - be the worth if food needed by 2 men for a 15-day trip

$$x = \frac{\$3,600}{6 \times 3} \times (2 \times 15 \text{ man-days})$$

$$= \frac{\$3,600 \times 30}{18}$$

$$= 200 \times 30$$

= $6,000 *Ans.

---

49. What is 6% of 2.5 ?

6% of 2.5

$$= \frac{6}{100} \times \frac{25}{10}$$

$= \frac{150}{1000}$

= 3 / 20 * Ans.

---

50. What is the value of 60 x 31 x 36 x 7 ?

In this kind of problem we don't need to multiply in order to get the answer. Notice in the choices that the first five digits are all the same so we just have to check what the last digit be This can be done by multiplying the last digit :

0 x 1 x 6 x 7 = 0

Therefore, the answer is : **468, 720 *Ans.**

MATH TEST 003

1. If 9x - 7 = 18y then $\frac{9x - 7}{6}$ = _____?

a. 2y
b. 3y
c. 6y
d. y + 6

_____2. A student buys an MSA Reviewer Book for $175 after receiving a discount of 12.5%. What was the marked price?

a. $ 187.50
b. $ 200
c. $ 225
d. $ 250

_____3. A town house unit was sold fir $2.50 M, yielding a 25% profit. For how much would it be sold to yield only a 10% profit on the cost?

a. $ 2M
b. $ 2.25M
c. $ 2.2M
d. $2.45M

_____4. What single discount is equivalent to successive discounts if 5% and 10%?

a. 10.5%
b. 12.5%
c. 14.5%
d. 15%

_____5. How many miles are there in 40 kilometers?

a. 25
b. 64
c. 32
d. 60

_6.If water tank can be filled 1 and 3/4 hours. What part of the tank can be filled in exactly 1 hour?

a. 1/2
b. 3/4
c. 4/7
d. 1

_____7. If 5 items cost d dollars how much would x items cost at the same rate?

a. p / 5x
b. 5 / px
c. x / 5p
d. px / 55

_____8. In a group of 8, 000 applicants for a **civil service** examination, 1600 failed to take the first part of the test. What percent of the total applicants took the first part of the test?

a. 20%
b. 30%
c. 40%
d. 80%

_____9. If the ratio a : b is 11 : 9, then a + b is _____?

a. 9
b. 11
c. 20
d. can't be determined from the given information

10. If 4 men can **paint** a fence in 2 days, what part of the job can be completed by one man in 8 days?

a. 1/4
b. 1/2
c. 3/4
d. whole job

_____11. Of John's salary, 1/10 is spent for clothing, and 1/4 for board and lodging. What part of the salary is left for other expenditures and savings?

a. 3/5
b. 13/20
c. 7/10
d. 2/5

_____12. Which of the following fractions is closest to 1/3 ?

a. 1/5
b. 2/5
c. 2/3
d. 3/5

_____13. Write 0.5 % as decimal.

a. 5
b. 0.5
c. 0.05
d. 0.005

14. If 10 parts of alcohol is mixed with 15 parts of water, what part of the mixture is alcohol?

a. 2/3

b. 2/5
c. 1/3
d. 3/5

_____15. If 2/5 of the workers in a factory go on vacation is September and 1/3 of the remainder take their vacation in October, what **fraction** of the workers take their vacation in some other time?

a. 2/5
b. 1/3
c. 1/15
d. 4/15

_____16. A bill was passed by a vote of 7 : 5 . What part of the vote counts were in favor of the bill?

a. 5/7
b. 7/12
c. 5/12
d. 7/5

_____17. If a man **travels** for half of an hour at 60 km/hr, and for quarter of an hour for 120 km/hr, what is his average speed?

a. 80 kph
b. 90 kph
c. 100 kph
d. 120 kph

18. What part of an hour elapses between 9:52 AM and 10:16 AM ?

a. 2/5
b. 1/3
c. 1/6
d. 1/4

_____19. If the ratio of boys **to girls** is 3 : 7 . If the class has 40 students, how many additional boys are needed to enroll to make the ratio 2 : 1 ?

a. 11
b. 33
c. 44
d. 50

_____20. If 45 feet of uniform wire weigh 5 kilograms, what is the weight of 30 yards o the same wire?

a. 5 kg
b. 10 kg
c. 15 kg
d. 20 kg

_____21. A school has enough oatmeal to feed 15 children in 4 days. If 5 more **children are** added, how many days will the oatmeal last ?

a. 3

b. 12
c. 1 ⅓
d. 5 ⅓

22. If a car can travel 60 km on 12 liters of gasoline, how many liters will be needed in a 210 km trip ?

a. 30
b. 42
c. 45
d. 50

_____23. Write 7.5% as a fraction.

a. 3/4
b. 3/40
c. 3/400
d. 3/4000

_____24. Write 3/8 % as decimal.

a. 0.00375
b. 0.0375
c. 0.375
d. 3.75

_____25. Find 40% of 60.

a. 0.24
b. 2.4
c. 24
d. 240

26. Find 70% of 60.

a. 420
b. 4.2
c. 4200
d. 42

_____27. What is 175% of 24 ?

a. 0.42
b. 4.2
c. 42
d. 420

_____28. What percent of 60 is 42 ?

a. 0.7
b. 7
c. 70
d. 1.428

_____29. 54 is 20% of what number ?

a. 2.7
b. 270
c. 10.8
d. 108

_____30. 24 is 150% of what number ?

a. 8
b. 12
c. 16
d. 18

31. How many thirty- seconds are there in 62 ½ % ?

a. 5
b. 8
c. 12
d. 20

_____32. A shirt marked $560 is sold for $392. What was the rate of discount ?

a. $ 168
b. $ 123
c. $ 30%
d. 70%

_____33. A kinder class has g number of girls and b number of boys. The ratio of boys to girls is _____ ?

a. bg
b. b / (b+g)
c. g/b
d. b/g

_____34. $\sqrt{\frac{1}{25} + \frac{1}{144}}$ **= _____ ?**

a. 1/17
b. 17/60
c. 13/60
d. 12/13

a.
12
b. 18
c. 18
d. 24

_____36. If prices are reduced by 25% sales increased by 33 ⅓ % what is the net effect on gross revenue ?

a. they increase by 8 and 1/3
b. they decrease by 8 and 1/3
c. they remain the same
d. they increase by 10%

e.

_____37. An 8-meter rope is cut so that one part is 3/5 of the other. How long in meters, is the shorter segment ?

a. 2
b. 3
c. 4
d. 5

_____38. When the gasoline gauge of an automobile shows 1/8 full, 52.5 liters is needed to completely fill the gasoline tank. What is the capacity, in liters of the gasoline tank?

a. 48
b. 50
c. 56
d. 60

39. What part of gallon is 7 pints, given that 1 quart = 2 pints, 4 quarts = 1 gal. ?

a. 7/8
b. 7/16
c. 7/4
d. 3/4

_____40. If 7 is added to four times a number, the result is 91. What is the number ?

a. 21
b. 42
c. 32
d. 56

_____41. The area of a square is 36 sq. cm. What is the perimeter of the square ?

a. 6 cm
b. 24 cm
c. 30 cm
d. 36 cm

_____42. A truck can carry a load of 8 / 9 tons. How many trips must the truck make to deliver 10 and 2 / 3 tons of sand?

a. 8
b. 9
c. 10
d. 12

43. What is the value of

$$\frac{6a^2b^3}{9} \text{ if } a = 2 \text{ and } b = 3 \text{ ?}$$

a. 18
b. 24
c. 36
d. 72

_____44. $Z + \frac{4}{Z} = 4$, then Z = _____?

a. 1
b. 2
c. -1
d. -2

_____45. $\frac{1}{x} \div \frac{1}{x} =$ _____ ?

a. 1
b. $1/x^2$
c. x^2
d. 2x

_____ 46.x $\sqrt{0.0004}$ = 4 : x = _____ ?

a. 80
b. 100
c. 200
d. 400

47. A piece of wire is cut into three, so that the first is three times as long as the second and the second is three times as long as the third. What part of the entire piece is the shortest?

a. 1/9
b. 1/10
c. 1/13
d. 1/15

48. What is the average of the first 20 positive integers ?

a. 9
b. 9.5
c. 10
d. 10.5

49. A sales representative **earns** 5% commission on all sales between $ 20, 000 and $ 60, 000, and 8% on all sales over $ 60,000. What is the commission in a week in which her total sales was $ 80, 000 ?

a. $ 3, 600
b. $ 4, 600
c. $ 5, 600
d. $ 6, 400

50. $\sqrt{\frac{12}{27} + \frac{12}{9}}$

a. 16/9
b. 4/3
c. 3/4
d. 9/16

MATH TEST 003 ANSWERS AND EXPLANATIONS

1. If 9x - 7 = 18y then $\frac{9x - 7}{6}$ = _____?

9x - 7 = 18y

$$\frac{9x - 7}{6} = \frac{18y}{6}$$

= 3y *Ans.

---

2. A student buys an MSA Reviewer Book for $175 after receiving a discount of 12.5%. What was the marked price?

1 MP - 0.125 MP = $175

0.875 MP = $175

7/8 MP = $175 (note : 7/8 is the fraction form of 0.875)

MP = $175 x (8/7)

MP = $200 *Ans.

---

3. A town house unit was sold fir $2.50 M, yielding a 25% profit. For how much would it be sold to yield only a 10% profit on the cost?

Let C be the original cost of the house
Let 0.25C be the profit

C + 0.25C = $2.5 M

1.25C = $2.5M

$$\frac{1.25C}{} = \frac{\$2.5M}{}$$

1.25 1.25

C = $2M

The new selling price that would yield at 10% profit on the cost would be :

= $2M + 0.10 ($2M)
= $2M + 0.20M
= $2.2M *Ans.

---

4. What single discount is equivalent to successive discounts if 5% and 10%?

The formula for a single **rate of discount** equivalent to the series of discounts is :

$R = 1 - [(1 - r_1)(1 - r_2)...(1 - r_n)]$

for $r_1 = 5\%$ and $r_2 = 10\%$

$R = 1 - [(1 - 0.05)(1 - 0.10)]$
$= 1 - [(0.95)(0.90)]$
$= 1 - 0.855$
$= 0.145$ or 14.5% *Ans.

---

5. **How many** miles are there in 40 kilometers?

1 mile = 1.6 kilometers

$$40 \text{ kilometers} = 40 \text{ km} \times \frac{1 \text{ mile}}{1.6 \text{ km}}$$

= 25 miles *Ans.

6. If **water tank** can be filled 1 and 3/4 hours. What part of the tank can be filled in exactly 1 hour?

The part of the tank that can be filled in 1 hour is 1 + 1 and 3/4

$$= 1 \div \frac{7}{4}$$

$$= 1 \times \frac{4}{7}$$

$$= \frac{4}{7} \text{ *Ans.}$$

---

7. If 5 items cost d **dollars how much** would x items cost at the same rate?

The **cost of** x items $= \frac{d}{5} x$

$$= \frac{dx}{5} \text{ *Ans.}$$

---

8. In a group of 8, 000 applicants for a civil service examination, 1600 failed to take the first part of the test. What percent of the total applicants took the first part of the test?

$$\text{Rate} = \frac{8000 - 1600}{8000} \times 100\%$$

$$= \frac{6400}{8000} \times 100\%$$

$$= 0.8 \times 100\%$$

= 80% *Ans.

---

9. If the ratio a : b is 11 : 9, then a + b is _____?

The sum of a and b can't be determined from the given information because there are infinite possibilities for this like;

a + b = 11 + 9
= 22 + 18
= 33 + 27 and so on...

d. can't be determined from the given information. *Ans.

10. If 4 men can paint a fence in 2 days, what part of the job can be completed by one man in 8 days?

$$\frac{1 \text{ whole job}}{4 \text{ men} \times 2 \text{ days}} \times 1 \text{ man} \times 8 \text{ days}$$

$$\frac{8 \text{ whole jobs}}{8}$$

1 whole job *Ans.

---

11. Of John's salary, 1/10 is spent for clothing, and 1/4 for board and lodging. What part of the salary is left for other expenditures and savings?

Let x - be the part left.

$$x = 1 - \left(\frac{1}{10} + \frac{1}{4}\right)$$

$$= 1 - \left(\frac{2 + 5}{20}\right)$$

$$= \frac{20}{20} - \frac{7}{20}$$

= 13 / 20 *Ans.

---

12. Which of the following fractions is closest to 1/3 ?

We can solve the problem by getting the LCM of the given fraction and all the chioces.

The LCM = 15 then compare the differences of each choice to 1/3.

1/3 - 1/5 = 5/15 - 3/15 = 2/15

2/5 - 1/3 = 6/15 - 5/15 = 1/5 *Ans.

2/3 - 1/3 = 10/15 - 5/15 = 10/15

3/5 - 1/3 = 9/15 - 5/15 = 4/15

---

13. Write 0.5 % as decimal.

To change % to decimal, we drop the % sign and move the decimal point two places to the left.

0.05 % = 0.005 *Ans.

14. If 10 parts of alcohol is mixed with 15 parts of water, what part of the mixture is alcohol ?

The part of the mixture is alcohol = $\frac{10}{10 + 15}$

$= \frac{10}{25}$

= 2/5 *Ans.

---

15. If 2/5 of the workers in a factory go on vacation is September and 1/3 of the remainder take their vacation in October, what **fraction** of the workers take their vacation in some other time?

The fraction of the workers that take their vacation in some other time

$= 1 - [\frac{2}{5} + \frac{1}{3}(1 - \frac{2}{5})]$

$= 1 - [\frac{2}{5} + \frac{1}{3}(\frac{3}{5})]$

$= 1 - [\frac{2}{5} + \frac{1}{5}]$

$= 1 - \frac{3}{5}$

$= \frac{2}{5}$ *Ans.

---

16. A bill was passed by a vote of 7 : 5 . What part of the vote counts were in favor of the bill?

The part of the vote in favor of the bill : $\frac{7}{7 + 5}$

= 7 / 12 *Ans.

17. If a man travels for half of an hour at 60 km/hr, and for quarter of an hour for 120 km/hr, what is his average speed?

$d_{1/2} = \frac{1}{2}$ hr. x $\frac{60 \text{ km}}{\text{hr}}$ = 30 km

$d_{1/4} = \frac{1}{4}$ hr. x $\frac{120 \text{ km}}{\text{hr}}$ = 30 km

Average speed = $\frac{\text{total distance}}{\text{total time}}$

$$\frac{(30 + 30)}{(\frac{1}{2} + \frac{1}{4})}$$

$$\frac{(30 + 30) \text{ km.}}{\frac{3}{4} \text{ hr.}}$$

$$60 \left(\frac{4}{3}\right) \text{ kph}$$

Ave. Speed = 80 kph. *Ans.

18. What part of an hour elapses between 9:52 AM and 10:16 AM ?

= 10:16 - 9:52

10:16 is also equal to 9:76 since 76 is equal to 1 hour and 16 minutes. 9 hours + 1 hour and 16 minutes = 10:16.

= 9:76 - 9:52 = 24 minutes

$= 24 \text{ ~~minutes~~} \times \frac{1 \text{ hr}}{60 \text{ ~~min~~}}$

= 24 / 60 hrs.

= 2 / 5 hours *Ans.

19. If the ratio of boys to girls is 3 : 7 . If the class has 40 students, how many additional boys are needed to enroll to make the ratio 2 : 1 ?

3x + 7x = 40 The number of boys : 3x = 3(4) = 12

10x = 40 The number of girls : 7x = 7(4) = 28

$x = \frac{40}{10}$ since the desired ratio of boys to girls is 2 : 1 .

x = 4 the required number of boys is 2 x 28 = 56
so 56 - 12 = **44 more boys are needed. *Ans.**

---

20. If 45 feet of uniform wire weigh 5 kilograms, what is the weight of 30 yards o the same wire ?

Let x - be the length of 30 yards of the same wire.

$$30 \text{ yards} \times \frac{3 \text{ feet}}{\text{yard}} = 90 \text{ feet}$$

$$\frac{x}{90} = \frac{5}{45}$$

$$\frac{x}{90} = \frac{1}{9}$$

x = 10 kgs. *Ans.

---

21. A school has enough oatmeal to feed 15 children in 4 days. If 5 more children are added, how many days will the oatmeal last ?

This problem is an example of an inverse proportion.

4 : 1/5 = x : 1 / (15 + 5)

4 : 1/15 = x : 1/20

$$\frac{1}{15}x = 4\left(\frac{1}{20}\right)$$

$$\frac{x}{15} = \frac{1}{5}$$

$$x = \frac{1}{5}(15)$$

x = 3 days *Ans.

22. If a car can travel 60 km on 12 liters of gasoline, how many liters will be needed in a 210 km trip ?

This is a direct proportion problem, Let x - be the number of liters needed.

x : 210 = 12 : 60

60x = 210 (12)

60x = 2520

x = 2520 / 60

x = 42 liters *Ans.

---

23. Write 7.5% as a fraction.

7.5% = $\frac{7.5}{100}$

= $\frac{75}{100}$

= $\frac{3}{40}$ *Ans.

---

24. Write 3/8 % as decimal.

3/8 % = 0.375 %

= 0.00375 *Ans.

---

25. Find 40% of 60.

= 0.40 x 60

= 24 *Ans.

26. Find 70% of 60.

= 0.70 x 60

= 42 *Ans.

---

27. What is 175% of 24 ?

P = Rate x Base
= 1.75 x 24
= 42 *Ans.

---

28. What percent of 60 is 42 ?

R = $\frac{P}{B}$ x 100%

R = 70% *Ans.

---

29. 54 is 20% of what number ?

N = 54 ÷ 0.20

= 540 / 2

= 270 *Ans.

---

30. 24 is 150% of what number ?

24 = 1.5 x N

N = 24 / 1.5

N = 240 / 15

N = 16 *Ans.

31. How many thirty- seconds are there in 62 ½ % ?

$$\frac{N}{32} = 62\ ½\ \%$$

$$\frac{N}{32} = \frac{5}{8}$$

$$N = \frac{5}{8}(32)$$

N = 20 *Ans.

---

32. A shirt marked $560 is sold for $392. What was the **rate of discount** ?

$$\text{Rate} = \frac{\text{discount}}{\text{original price}} \times 100\%$$

$$= \frac{\$560 - \$392}{\$560} \times 100\ \%$$

$$= \frac{\$168}{\$560} \times 100\%$$

= 30% *Ans.

---

33. A kinder class has g number of girls and b number of boys. The ratio of boys **to girls** is _____ ?

The ratio of boys to girls is b / g *Ans.

---

34. $\sqrt{\frac{1}{25} + \frac{1}{144}} =$ _____ ?

$$= \sqrt{\frac{144}{25} + \frac{25}{144}}$$

$$= \sqrt{\frac{169}{(25)(144)}}$$

$$= \frac{13}{(5)(12)}$$

= 13 / 60 *Ans.

35. A basketball team has won 24 **games** out of 36 games played. It has 24 more games to play. **How many** ofthese must the team win to make its record 80% for the season ?

The total number of wins = 80% x (total no. of games played)
= 0.80 x (36 + 24)
= 0.80 (60)
= 48

Since they already won 24 games, they need to win 24 more games. * Ans.

---

36. If prices are reduced by 25% sales increased by 33 ⅓ % what is the net effect on gross revenue ?

Revenue = price x no. items sold
R = P x N

R_{orig} = PN

If prices are reduced by 25%

R_{new} = (P - 25% P) (N + 33 ⅓ N)

= (P - ¼ P) (N + ⅓ N)

= (¾ P) (4/3 N)

R_{new} = PN
R_{new} = R_{orig}

The revenues remain the same * Ans.

---

37. An 8-meter rope is cut so that one part is 3/5 of the other. How long in meters, is the shorter segment ?

Let x - be the length of the shorter rope.
Let 8 - x be the length of the larger rope

$x = \frac{3}{5}(8 - x)$

5x = 3 (8 - x)
5x = 24 - 3x
5x + 3x = 24
8x = 24
x = 3 meters * Ans.

---

38. When the gasoline guage of an automobile shows 1/8 full, 52.5 liters is needed to completely fill the gasoline tank. What is the capacity, in liters of the gasoline tank?

Let x - be the capacity in liters

$x - \frac{1}{2}x = 52.5$

$\frac{7}{8}x = 52.5$

$x = 52.5 \left(\frac{8}{7}\right)$

x = 60 * Ans.

39. What part of gallon is 7 pints, given that 1 quart = 2 pints, 4 quarts = 1 gal. ?

therefore, 8 pints = 1 gal.

$7 \text{ pints} = 7 \text{ pints} \times \frac{1 \text{ gal}}{8 \text{ pints}}$

= 7 / 8 gallon * Ans.

---

40. If 7 is added to four times a number, the result is 91. What is the number ?

Let x - be the number.

$4x + 7 = 91$
$4x = 91 - 7$
$4x = 84$
$x = 84 / 4$
x = 21 * Ans.

---

41. The area of a square is 36 sq. cm. What is the perimeter of the square ?

$A = s^2$
$36 = s^2$

$s = \sqrt{36}$

s = 6 cm.

$P = 4s$
$= 4 (6 \text{ cm.})$
= 24 cm. * Ans.

---

42. A truck can carry a load of 8 / 9 tons. How many trips must the truck make to deliver 10 and 2 / 3 tons of sand?

Let N - be the number of trips.

$N = 10\frac{2}{3} \div 8/9$

$= \frac{32}{3} \div \frac{8}{9}$

$= \frac{32}{3} \times \frac{9}{8}$

= 12 trips * Ans.

43. What is the value of

$6a^2b^3$

$\frac{}{9}$ if a = 2 and b = 3 ?

$= \frac{6a^2b^3}{9}$

$= \frac{6(2)^2(3)^3}{9}$

$= \frac{6(4)(27)}{9}$

= 72 * Ans.

---

44. $Z + \frac{4}{Z} = 4$

This problem can be solved the easiest way by substituting each choice to Z.

Z = 1

$1 + \frac{4}{1} = 4$

1 + 4 = 4

5 ≠ 4

Z = 2

$2 + \frac{4}{2} = 4$

2 + 2 = 4

4 = 4 * Ans.

---

45. $\frac{1}{x} \div \frac{1}{x} =$ _____ ?

$= \frac{1}{x} \bullet \frac{x}{1}$

= 1 * Ans.

---

46. $x\sqrt{0.0004} = 4 : x =$ _____ ?

x (0.02) = 4

$$x = \frac{4}{0.02}$$

$$x = \frac{400}{2}$$

x = 200 * Ans.

47. A piece of wire is cut into three, so that the first is three times as long as the second and the second is three times as long as the third. What part of the entire piece is the shortest?

First part = 9x
Second part = 3x
Third part = x

9x + 3x + x = 13x

$$\text{part} = \frac{\text{length of the shortest part}}{\text{length of entire wire}}$$

$$= \frac{x}{13x}$$

= 1 / 13 * Ans.

---

48. What is the average of the first 20 positive integers ?

$$\text{Average} = \frac{\text{sum of the numbers}}{\text{numbers of items added}}$$

$$= \frac{1 + 2 + + 3 + 4 + 5 + 6 + 7 .... + 20}{20}$$

= 10.5 * Ans.

---

49. A sales representative earns 5% commission on all sales between $ 20, 000 and $ 60, 000, and 8% on all sales over $ 60,000. What is the commission in a week in which her total sales was $ 80, 000 ?

Commission = 5% (6000) + 8% (80,000 - 60,000)

= 0.05 (60,000) + 0.08 (20,000)

= 3,000 + 1,600

= $ 4, 600 * Ans.

---

50. $\sqrt{\frac{12}{27}} + \sqrt{\frac{12}{9}}$

$\sqrt{\frac{4}{9}} + \sqrt{\frac{4}{3}}$

$$\sqrt{\frac{4 + 12}{9}}$$

$$\sqrt{\frac{16}{9}}$$

= 4 / 3 * Ans.

MATH TEST 004

1. A car that cost $ 1.2 M can be sold for $ 600, 000 after 5 years of use. What will be the yearly depreciation cost ?

a. $ 100, 000
b. $ 12, 000
c. $ 120, 000
d. $ 600, 000

_____2. How many times does the digit 7 appear in the numbers from 1 to 100 ?

a. 9
b. 10
c. 19
d. 20

_____3. At the rate of $ 44 per hundred sheets of colored bond paper, how much is the cost of 500 sheets ?

a. $ 121
b. $ 242
c. $ 440
d. $ 480

_____4. At $ 25 per board foot of wood, what is the cost of 15 pieces of 2" x 2" x 12' ?
(1 board foot = 1 ft. x 1 ft. x 1 inch)

a. $ 18, 000
b. $ 15, 000
c. $ 1, 250
d. $ 1, 500

_____5. The decimal form of 0.56 % is _____ ?

a. 0.0056
b. 0.056
c. 0.56
d. 56

_6. If 3 feet = 1 yard, how many yards are there in 27 feet ?

a. 9
b. 81
c. 24
d. 12

_____7. How many feet are there in 9 and 1/3 yards ?

a. 9
b. 10
c. 12
d. 28

_____8. A hand-carved wooden dining set is priced at $69, 950. If 20% discount is given to the customer, how much would he have to pay for the set ?

a. $ 53, 960
b. $ 54, 960
c. $ 55, 960
d. $ 56, 960

_____9. If an article priced at $99.80 is subjected to a 10% VAT, what would be the total amount to be paid forthearticle ?

a. $ 89.82
b. $ 109.78
c. $ 109.80
d. $ 110.78

_____10. Find the cost of 6 and 1/2 dozen eggs at $ 30.00 per dozen.

a. $ 186
b. $ 190
c. $ 194
d. $ 195

a.
$ 151.20
b. $ 153
c. $ 160
d. $ 165

_____12. Mr. Mansueto Velasco Jr. is buying a piece of lot at Filinvest Homes East. The dimension of the rectangular lot is 14 meters by 30 meters at $ 3, 500 per square meters, what would be the total cost of the lot ?

a. $ 308, 000
b. $ 105, 014
c. $ 735, 000
d. $ 1, 470, 000

_____13. How much must a salesman sell in a month to yield him a commission of $ 12, 000, if his rate of commission is 5% on goods sold ?

a. $ 12, 000
b. $ 60, 000
c. $ 240, 000
d. $ 24, 000

_____14. How much would Charlie receive from his monthly salary of $ 8,000 after deducting 2 and 1/2 % forSSS contribution and 5% withholding tax ?

a. $ 7, 400
b. $ 7, 500
c. $ 7, 850
d. $ 7, 950

15. A student had $ 1, 050 in his wallet. He spent $ 640 for books and school supplies. What part of his money did he spend?

a. 2/5
b. 3/5
c. 2/3
d. 3/4

_____16. M$. Cecille Garcia saves 18% of her monthly salary of $ 16, 500. How much does she saved in a year?

a. $ 34, 460
b. $ 35, 460
c. $ 110, 000
d. $ 260, 000

_____17. Mrs. Leny Ngo wishes to buy a second hand car, the cash price of which is $ 150, 000. Not having ready cash she agrees to pay 1/3 down and the balance in 10 monthly installments of 11, 000 each. What is the total price of the car ?

a. $ 160, 000
b. $ 170, 000
c. $ 110, 000
d. $ 260, 000

_____18. A cross-stitch store owner buys cross-stitch frame at $ 12, 500 each. How much should he sell each in order to realize a profit of 3/20 more than the buying price ?

a. $ 12, 750
b. $ 13, 375
c. $ 13, 350
d. $ 14, 375

_19. This year XYZ company's profit was $ 2, 440, 000, which is 22% more than last year's profit. How much was the profit last year ?

a. $ 1, 220, 000
b. $ 2, 000, 000
c. $ 1, 880, 000
d. $ 1, 900, 000

_____20. Mrs. Ramos pays $ 1, 530 for a dress at 15 % discount. How much is the marked price ?

a. $ 1, 545
b. $ 1, 600
c. $ 1, 800
d. $ 1, 750

_____21. A customer buys 4 pairs of socks originally priced at $ 60.00 each. If the reduced price is $ 47.50, how much does he save on this purchase ?

a. $ 50
b. $ 60
c. $ 65
d. $ 70

_____22. Gerard left City A to drive to City B at 6:15 A.M. and arrived at 1:45 P.M. If he averaged 60 km per hour and stopped one hour for lunch, how far is City A to City B ?

a. 390 km

b. 420 km
c. 450 km
d. 270 km

23. The sum of $\sqrt{81} + \sqrt{100}$ is _____ ?

a. $\sqrt{181}$
b. 10
c. 9
d. 19

24. The sum of three consecutive integers is 54. Find the smallest integer.

a. 16
b. 17
c. 18
d. 19

25. How many miles does a car travel if it averages at a rate of 35 miles **per hour** for 3 hours and 24 minutes?

a. 109
b. 112
c. 113
d. 119

26. Elmer can deliver newspaper in his route for 1 ½ hours. Wowie who takes his place one day finds that it takes him 1 ½ longer to deliver these. How long will it take to deliver the papers if they work together ?

a. 1 hour
b. 1 hour 15 minutes
c. 1 hour 20 minutes
d. 3 hours

27. If it takes h hours to paint the wall, what part of the wall is **painted** in one hour ?

a. h
b. 1/h
c. hx
d. x/h

28. A sock of corn will feed 18 ducks for 54 days. How long will it feed 12 ducks ?

a. 36
b. 60
c. 72
d. 81

29. Find the next number in the series 1, 4, 9, 16, _____ ?

a. 20
b. 25
c. 26
d. 30

30. A bag is sold for $680 while marked at $800. What was the rate of the discount ?

a. 12%
b. 15%

c. 20%
d. 25%

31. Six hundred examinees **passed the** Licensure Examination last year. This represents the 8 ⅓ percent of the total examinees. How many examinees failed **the exam**?

a. 6,000
b. 6,200
c. 6,600
d. 7,200

32. If 4 miles = 6.44 km, then 14.49 km equals how many miles ?

a. 7
b. 8
c. 9
d. 10

33. $(a^2 - 4b^2)\,c$ is equivalent to ac + _____ ?

a. 2bc
b. -2bc
c. 2b
d. -2b

_____34. In a certain class the ratio of boys to girls is 4 : 5. If the class has 54 students, how many are girls ?

a. 24
b. 30
c. 12
d. 27

_____35. Solve for x : ax = bx + cx - d, $a \neq b \neq c$.

a. $\frac{d}{a - b - c}$

b. $\frac{d}{b - a - c}$

c. $\frac{d}{b + c - a}$

d. $\frac{d}{b - c - a}$

_____36. The ratio of men athlete to women in an athletic meet is 5 : 3 and the total number of athlete is 2, 400, how many additional women athlete would have to join to make the ratio of men to women 1 : 1 ?

a. 6
b. 400
c. 600
d. 1, 200

37. If prices are reduced by 20 %, quantity sold increase by 25 %. What is the net effect on the gross revenue?

a. it increases by 5%
b. it decreases by 5%
c. it remains the same
d. it increases by 10%

_____38. The average of three numbers is xyz. If the sum of two numbers is x + y, what is the other number?

a. 3xyz - (x+y)
b. xyz - (x+y)
c. z
d. can't be determined from the given information

_____39. When + 13 is added to - 15, the sum is _____ ?

a. -2
b. 2
c. -18
d. 18

_____40. When -15 is subtracted from -18, the difference is _____?

a. -3
b. 3
c. 33
d. -33
e.

_____41. When the product of (-4) and (-17) is divided by 2, the quotient is _____ ?

a. -34
b. 34
c. 68
d. -66

42. If 5x + 17 = 32, then x = _____ ?

a. 9.8
b. -9.8
c. 3
d. -3

_____43. Solve for M :

$$\frac{M}{7} - \frac{M}{3} = 4$$

a. 21
b. -21
c. -1
d. 1

_____44. If x + y = 4a and x - y = 2b then y = _____ ?

a. b - 2a

b. 2a - b
c. 2a + b
d. a - 2b

_____45. If 0.37 m = 0.0111 then m = _____ ?
a. 0.03
b. 0.3
c. 3
d. 30

_____46. If 1 / M = 4 and $ = 2, what is $ in terms of M ?
a. 1 / 2M
b. -2M
c. -(1/2M)
d. 2M

47. A horse is tied to a pole with a rope of 7 meters long. How much grazing area does it have?
a. 154 sq. m.
b. 164 sq. m.
c. 314 sq. m.
d. 174 sq. m.

_____48. What number is missing in this sequence : 5, 7, 11, 17, _____ ?
a. 22
b. 23
c. 25
d. 27

_____49. How many two-digit numbers can be formed from the digits 1, 2, 3, 4, and 5 if a digit cannot be used more than once?
a. 10
b. 15
c. 20
d. 25

_____50. What is the value of x in 5 : x = x : 125 ?
a. 5
b. 15
c. 20
d. 25

_____51. If one bilao of pansitguisado serves 7 people, how many bilaos are needed to serve a banquet of 126 people?
a. 15
b. 16
c. 17
d. 18

MATH TEST 004 ANSWERS AND EXPLANATIONS

1. A car that cost $ 1.2 M can be sold for $ 600, 000 after 5 years of use. What will be the yearly depreciation cost ?

Yearly depreciation cost = $\frac{\text{depreciation}}{\text{no. of years}}$

= $\frac{\$\ 1{,}200{,}000 - \$\ 600{,}000}{5}$

= $\frac{\$\ 600{,}000}{5}$

= $ 120, 000 per year * Ans.

---

2. How many times does the digit 7 appear in the numbers from 1 to 100 ?

7, 17, 27, 37, 47, 57, 67, 77, 87, 97,

71, 72, 73, 74, 75, 76, 77, 78, 79

19 times * Ans.

---

3. At the rate of $ 44 per hundred sheets of colored bond paper, how much is the cost of 500 sheets ?

Cost of the 550 sheets = $\frac{\$\ 44}{100\ \text{sheets}}$ x 550 sheets

= $ 44 x 5.5

= $ 242 * Ans.

---

4. At $ 25 per board foot of wood, what is the cost of 15 pieces of 2" x 2" x 12' ?

(1 board foot = 1 ft. x 1 ft. x 1 inch)

Cost = $\frac{\$\ 25}{\text{bd. ft.}} \times \frac{2" \times 2" \times 12" \text{ bd. ft.}}{12"}$

= $ 1, 500 * Ans.

---

5. The decimal form of 0.56 % is _____ ?

Move 2 decimal places to the left (100%).

0.56 % = 0.0056 * Ans.

6. If 3 feet = 1 yard, how many yards are there in 27 feet ?

3 feet : 1 yard = 27 feet : x yard

3 : 1 = 27 : x
3x = 1(27)
3x = 27
x = 27 / 3
x = 9 yards * Ans.

---

7. How many feet are there in 9 and 1/3 yards ?

Given that 1 yard = 3 feet :

1 yard : 3 feet = 9 ⅓ yards : x feet

1 : 3 = 9 ⅓ : x
1(x) = 3(9 ⅓)
x = 3 (28/3)
x = 28 feet * Ans.

---

8. A hand-carved wooden dining set is priced at $69, 950. If 20% discount is given to the customer, how much would he have to pay for the set ?

Net Price = $ 69, 950 - 20 ($69,950)
= $ 69, 950 - $13,390
= $ 55, 960 * Ans.

---

9. If an article priced at $99.80 is subjected to a 10% VAT, what would be the total amount to be paid for the article?

Total Amount to be paid = $ 99.80 + 0.10 ($99.80)
= $ 99.80 + $ 9.98
= $ 109.78 * Ans.

---

10. Find the cost of 6 and 1/2 dozen eggs at $ 30.00 per dozen.

1 dozen : $ 30.00 = 6 and 1/2 dozens : x dollars

1 : 30 = 6.5 : x

1(x) = 30 (6.5)

x = $ 195.00 * Ans.

11. A lady employee purchased an umbrella for $ 180 less 20%. How much should she pay if its is subject to a 5 % sales tax ?

Total Amount to be paid = ($180 - 0.20 x $ 180) x (1.05)

= ($180 - 36) (1.05)

= $144 x 1.05

= $ 151.20 * Ans

---

12. Mr. Mansueto Velasco Jr. is buying a piece of lot at Filinvest Homes East. The dimension of the rectangular lot is 14 meters by 30 meters at $ 3, 500 per square meters, what would be the total cost of the lot ?

Total Cost of the lot = area x price per unit area

= (14 x 30) sq. meters x $\frac{\$\ 3,500}{\text{sq. meters}}$

= 14 x 30 x $3,500

= $ 1, 470, 000 * Ans.

---

13. How much must a salesman sell in a month to yield him a commission of $ 12, 000, if his rate of commission is 5% on goods sold ?

Sales = Commission / Rate

= $ 12, 000 / 0.05

= $ 240, 000 * Ans.

---

14. How much would Charlie receive from his monthly salary of $ 8,000 after deducting 2 and 1/2 % for SSS contribution and 5% withholding tax ?

Total Rate of deductions = 2 ½ % + 5 % = 7 ½ %

Net Pay = Regular pay (1 - rate of deductions)

= $ 8, 000 (1 - 0.075)

= $ 8, 000 (0.925)

= $ 7, 400 * Ans.

15. A student had $ 1, 050 in his wallet. He spent $ 640 for books and school supplies. What part of his money did he spend?

Part of the money spent = $\frac{\$\ 630 / \$\ 210}{\$\ 1050 / \$\ 210}$

= 3 / 5 * Ans.

---

16. MS. Cecille Garcia saves 18% of her monthly salary of $ 16, 500. How much does she saved in a year?

Amount of money saved = 0.18 x $ 16, 500 / ~~month~~ x 12 ~~month~~ / year

= 0.18 x $ 16, 500 x 12

= $ 35, 640 * Ans.

---

17. Mrs. Leny Ngo wishes to buy a second hand car, the cash price of which is $ 150, 000. Not having ready cash she agrees to pay 1/3 down and the balance in 10 monthly installments of 11, 000 each. What is the total price of the car ?

Total price of the car = ⅓ x $ 150, 000 + 10 x $ 11, 000

= $ 50, 000 + $ 110, 000

= $ 160, 000 * Ans.

---

18. A cross-stitch store owner buys cross-stitch frame at $ 12, 500 each. How much should he sell each in order to realize a profit of 3/20 more than the buying price ?

Selling price = $ 12, 500 x (1 + 3/20)

= $ 12, 500 (23/20)

= $ 14, 375 * Ans.

19. This year XYZ company's profit was $ 2, 440, 000, which is 22% more than last year's profit. How much was the profit last year ?

Let x - be the year's profit

x + 0.22x = $ 2, 440, 000

1.22x = $ 2, 440, 000

x = $ 2, 440, 000 / 1.22

x = $ 2, 000, 000 * Ans

---

20. Mrs. Ramos pays $ 1, 530 for a dress at 15 % discount. How much is the marked price ?

Let x - be the marked price

Marked price - Discount = Selling price

x - 0.15 x = $ 1530

0.85x = $ 1530

$x = \frac{\$\ 1540}{0.85}$

x = $ 1, 800 * Ans.

---

21. A customer buys 4 pairs of socks originally priced at $ 60.00 each. If the reduced price is $ 47.50, how muchdoes he save on this purchase ?

Amount saved = 4 x ($ 60.00 - $ 47.50)
= 4 x $ 12.50
= $ 50.00 * Ans.

---

22. Gerard left City A to drive to City B at 6:15 A.M. and arrived at 1:45 P.M. If he averaged 60 km per hour and stopped one hour for lunch, how far is City A to City B ?

No. of hours :

6 : 15 to 11:45

1:45 PM - 6:15 PM

13:45 PM - 6:15 PM = 7:30 or 7 and 1/2 hours total time

total time traveled = 7 ½ hours - 1 hour (time spent for lunch) = 6 ½ hours.

distance = rate x time

$60 = \frac{km}{hr} \times 6\ ½$ **hours**

= (60 x 6 ½) km

= [60 x 6 + 60 ½] km

= 360 + 30

= 390 km * Ans.

23. The sum of $\sqrt{81}$ + $\sqrt{100}$ is _____ ?

square root of 81 is 9 and
square root of 100 is 10

therefore, 9 + 10 = 19 * Ans.

---

24. The sum of three consecutive integers is 54. Find the smallest integer.

Let x - be the first consecutive integer
Let x + 1 be the second consecutive integer
Let x + 2 be the third consecutive integer

x + (x + 1) + (x + 2) = 54

$3x + 3 = 54$

$3x = 54 - 3$

$3x = 51$

$x = 51 / 3$

$x = 17$ * Ans.

---

25. How many miles does a car travel if it averages at a rate of 35 miles per hour for 3 hours and 24 minutes?

time = 3 hrs and 24 min

= 3 hrs + 24 / 60 hr.
= 3 and ⅖ hrs.

distance = rate x time

$= \frac{35 \text{ miles}}{\text{hr}} \times 3\frac{2}{5} \text{ hrs}$

= (35 x 3 ⅖) miles

= (35 x 3) + (35 + ⅖) miles

= [105 + 14] miles

= 119 miles * Ans.

---

26. Elmer can deliver newspaper in his route for 1 ½ hours. Wowie who takes his place one day finds that it takes him 1 ½ longer to deliver these. How long will it take to deliver the papers if they work together ?

In one hour,

Elmer can do $\frac{1}{1} = \frac{1}{3} = \frac{2}{3}$ of the job

Wowie can do $\frac{1}{1\ ½ + 1\ ½} = \frac{1}{3}$ of the job

(Part of the job finished in 1 hr.) x (no. of hours) = 1 whole job

(⅔ + ⅓) x N = 1

$\frac{3}{3} \times N = 1$

1 x N = 1

N = 1 hour * Ans.

27. If it takes h hours to paint the wall, what part of the wall is painted in one hour ?

part of the wall painted in 1 hour = 1 / h * Ans.

---

28. A sock of corn will feed 18 ducks for 54 days. How long will it feed 12 ducks ?

*** This is an example of an inverse proportion problem. As the number of ducks decreases the number of days increases.**

$$N : \frac{1}{12} = 54 : \frac{1}{18}$$

$$N\left(\frac{1}{18}\right) = \frac{1}{12}(54)$$

$$N = \frac{1}{\cancel{12}_{2}} \times \cancel{54}^{27} \times \cancel{18}^{3} \text{ days}$$

N = 81 days * Ans.

---

29. Find the next number in the series 1, 4, 9, 16, _____ ?

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$ * Ans.

---

30. A bag is sold for $680 while marked at $800. What was the rate of the discount ?

$$\text{rate of discount} = \frac{\text{discount}}{\text{marked price}} \times 100\ \%$$

$$= \frac{800 - 680}{800} \times 100\%$$

$$= \frac{120}{800} \times 100\%$$

= 15 % * Ans.

---

31. Six hundred examinees passed the Licensure Examination last year. This represents the 8 ⅓ percent of the total examinees. How many examinees failed the exam?

let F - be the number of examinees who failed

8 ⅓ % : 600 = (100 - 8 ⅓) % : F

$$\frac{1}{12} : 600 = \frac{11}{12} : F$$

$\frac{1}{12} F = \frac{11}{12} (600)$

F = 6, 600 * Ans.

4 miles : 6.44 km = x miles : 14.49 km

4 : 6.44 = x : 14.49
6.44x = 4 (14.49)
6.44x = 57.96
x = 57.96 / 6.44
x = 9 miles * Ans.

---

33. $\frac{(a^2 - 4b^2)\, c}{(a + 2b)}$ **is equivalent to ac + _____ ?**

$= \frac{(a + 2b)(a - 2b)}{(a + 2b)} \times c$

= (a - 2b) x c
= ac - 2bc
= ac + (-2bc) * Ans.

---

34. In a certain class the ratio of boys to girls is 4 : 5. If the class has 54 students, how many are girls ?

Girls = 5 / 9 (total number of students)

= (5 / 9) 54

= 30 girls * Ans.

---

35. Solve for x :

ax = bx + cx - d, a ≠ b ≠ c.

d = bx + cx - ax
d = x (b + c - a)
$x = \frac{d}{(b + c - a)}$

$x = \frac{d}{b + c - a}$ *** Ans**

36. The ratio of men athlete to women in an athletic meet is 5 : 3 and the total number of athlete is 2, 400, how many additional women athlete would have to join to make the ratio of men to women 1 : 1 ?

Original number of men;

(5 / 8) x 2, 400 = 1, 500

Original number of women;

(3 / 8) x 2, 400 = 900

To make the number of women equal to the number of men we must add (1500 - 900).

therefore, 600 women is needed. * Ans.

---

37. If prices are reduced by 20 %, quantity sold increase by 25 %. What is the net effect on the gross revenue?

Revenue = (price) x (Quantity sold)

$R_{old} = pq$
$R_{new} = (p - 0.20p) \times (q \times 0.25q)$
$= (0.80p)(1.25)\ pq$
$= (0.80)(1.25)\ pq$
$= 1\ pq$
$R_{new} = R_{old}$

therefore, the revenue remains the same * Ans.

---

38. The average of three numbers is xyz. If the sum of two numbers is x + y, what is the other number?

$$\frac{\text{Sum of the items added}}{\text{no. of items added}} = \text{average}$$

$$\frac{x + y + (\text{other number})}{3} = xyz$$

$$3\left[\frac{x + y + (\text{other number})}{3} = xyz\right] 3$$

$$x + y + \text{other number} = 3\ xyz$$

other number = 3 xyz - (x + y) * Ans.

39. When + 13 is added to - 15, the sum is _____ ?

Sum = +13 + (-15)
Sum = -2 * Ans.

---

40. When -15 is subtracted from -18, the difference is _____?

Difference = -18 - (-15)
Difference = -18 + 15
Difference = -3 * Ans.

---

41. When the product of (-4) and (-17) is divided by 2, the quotient is _____ ?

$$\text{Product} = \frac{(-4)\ (-17)}{}$$

$$= \frac{68}{2}$$

= 34 * Ans.

---

42. If 5x + 17 = 32, then x = _____ ?

$$5x + 17 = 32$$
$$5x = 32 - 17$$
$$5x = 15$$
$$x = 15 / 5$$

x = 3 * Ans.

---

43. Solve for M :

$$\frac{M}{7} - \frac{M}{3} = 4$$

$$\frac{3M}{21} - \frac{7M}{21} = 4$$

$$\frac{-4M}{21} = 4$$

$$M = 4 \left(\frac{-21}{4} \right)$$

M = -21 * Ans.

44. If x + y = 4a and x - y = 2b then y = _____ ?

$$x + y = 4a \quad \text{-------->} \quad x = 4a - y$$
$$x - y = 2b \quad \text{-------->} \quad x = 2b + y$$

$$x = x$$
$$2b + y = 4a - y$$
$$y + y = 4a - 2b$$
$$2y = 4a - 2b$$

$$\frac{2y}{2} = \frac{4a - 2b}{2}$$

$$y = \frac{4a - 2b}{2}$$

y = 2a - b * Ans.

---

45. If 0.37 m = 0.0111 then m = _____ ?

$$m = \frac{0.0111}{0.37}$$

$$= \frac{11.1}{37}$$

= 0.3 * Ans

---

46. If 1 / M = 4 and $ = 2, what is $ in terms of M ?

Since $ = 2

$$4 = \frac{1}{M}$$

$$2(2) = \frac{1}{M}$$

$$2\$ = \frac{1}{M}$$

$$\$ = \frac{1}{2M}$$ *** Ans.**

47. A horse is tied to a pole with a rope of 7 meters long. How much grazing area does it have? (use π = 22 / 7).

Area $= \pi r^2$

$= \pi (7m)^2$

$= \frac{22}{7} (49m^2)$

$= 22 (7m^2)$

$= 154m^2$ * Ans.

---

48. What number is missing in this sequence : 5, 7, 11, 17, _____ ?

5 + 2 = 7
7 + 4 = 11
11 + 6 = 17
17 + 8 = 25

therefore, 25 is the * Ans.

---

49. How many two-digit numbers can be formed from the digits 1, 2, 3, 4, and 5 if a digit cannot be used more than once?

5 - the five numbers can be used
4 - only four of the numbers can be used since repetition of the digits is not allowed

5 x 4 = 20

therefore, 20 numbers * Ans.

---

50. What is the value of x in 5 : x = x : 125 ?

5 : x = x : 125
x (x) = 5 (125)
$x^2 = 625$

$x = \sqrt{625}$
x = 25 * Ans.

---

51. If one bilao of pansitguisado serves 7 people, how many bilaos are needed to serve a banquet of 126 people?

N = no. of bilaos needed to serve 126 people

N : 126 = 1 : 7
N (7) = 126 (1)
7N = 126
N = 126 / 7
N = 18 * Ans.

MATH TEST 005

_____1. What number is as much more than 8 as it is less than 32 ?

a. 20
b. 40
c. 60
d. cannot be determined from the given information

_____2. A container van that is 3 meters wide, 5 meters long and 4 meters high will transport 200 crates whose volume is 6 cubic meters. How many trips will it take to transport all the crates?

a. 20
b. 25
c. 30
d. 35

_____3. A rectangular block of copper, with dimensions 4m x 6m x 9m, is melted and recast into a cubical block. Find the length of the side of the cubical block.

a. 4 cm
b. 6 cm
c. 9 cm
d. 12 cm

_____4. There are 9 male teachers for every 14 female teachers. If there are 69 teachers in all, how many teachers are female?

a. 18
b. 27
c. 39
d. 42

_____5. What would be the closest approximation to $\sqrt{66}$?

a. 7.9
b. 8

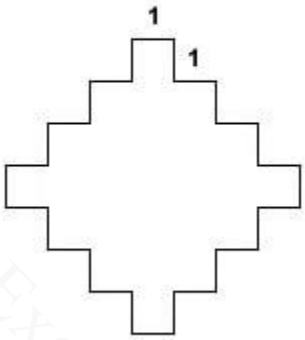
c. 8.1
d. 8.9

_____6. Manny can do a certain job in 1 day, Anna can do the same job in 2 days, and Josie can do the job in 3 days. How many days will it take them to do the job if they work together?

a. 1/6
b. 1/3
c. 6/11
d. 1/2

_____7. In the figure, all the line segments meet at right angles and each segments has a length of 1 unit. What is the area of the figure in square units?

Figure for No. 7



a. 9
b. 12
c. 16
d. 25

_____8. If $x - 3 = y$, then $(y - x)^3 =$ _____ ?

a. 9
b. -27
c. 27
d. 81

_____9. A speed of 90 km per hour is equivalent to how many meters per second?

a. 20
b. 25
c. 30
d. 45

_____10. A rectangular sheet of cardboard 5 inches long and 4 inches wide is cut into squares one inch on a side. What is the maximum number of such squares that can be formed?

a. 18
b. 20
c. 9
d. 16

_____11. A housewife bought 3 kilograms of beef priced at $ 108.75 per kilogram. How much change did she receive from a five-hundred dollar bill?

a. $ 163.25
b. $ 193.75
c. $ 173.75

d. $ 180.25

_____12. A delivery of 480 baskets of mangoes is divided into two fruit stands so thatthe difference between the two orders is 1/3 their average. What is the ratio of the smaller to the larger amount?

a. 5 : 7
b. 5 : 9
c. 5 : 12
d. 2 : 3

_____13. When the first and the last digits of 2, 836 are interchanged, the new number is _____.

a. 3996 more than 2, 836
b. 3996 less than 2, 836
c. 1404 more than 2, 836
d. 1404 less than 2, 836

_____14. If twice the value of a certain number is increased by 8 the result is 40. What is the number?

a. 8
b. 16
c. 24
d. 32

_____15. In a group of 120 persons, there are 32 more women than men. How many women are there in the group?

a. 44
b. 76
c. 88
d. 92

_____11. A housewife bought 3 kilograms of beef priced at $ 108.75 per kilogram. How much change did she receive from a five-hundred dollar bill?

a. $ 163.25
b. $ 193.75
c. $ 173.75
d. $ 180.25

_____12. A delivery of 480 baskets of mangoes is divided into two fruit stands so that the difference between the two orders is 1/3 their average. What is the ratio of the smaller to the larger amount?

a. 5 : 7
b. 5 : 9
c. 5 : 12
d. 2 : 3

_____13. When the first and the last digits of 2, 836 are interchanged, the new number is _____.

a. 3996 more than 2, 836
b. 3996 less than 2, 836
c. 1404 more than 2, 836
d. 1404 less than 2, 836

_____14. If twice the value of a certain number is increased by 8 the result is 40. What is the number?

a. 8
b. 16

c. 24
d. 32

_____15. In a group of 120 persons, there are 32 more women than men. How many women are there in the group?

a. 44
b. 76
c. 88
d. 92

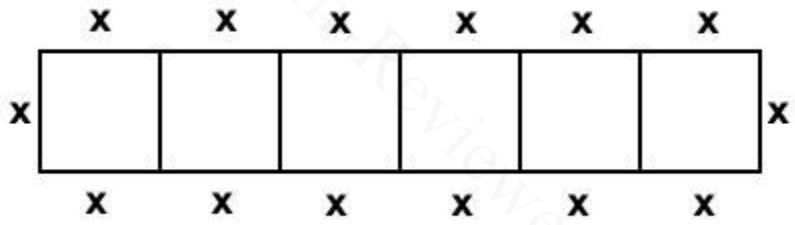
_____16. If the dimensions of a square change in such a manner that the area remains constant, what must happen to the other side if one side will be increased by 1/4 of itself?

a. it decreases by 1/5
b. it decreases by 1/4
c. it decreases by 1/3
d. it decreases by 1/2

_____17. A man rowed 4 miles upstream for 2 hours. If the river flowed with a current of 2 miles per hour, how long did the man's return trip take?

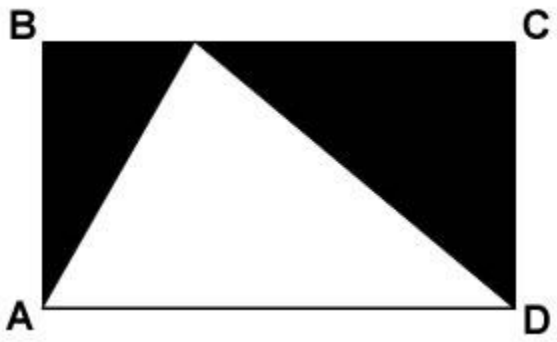
a. 1/3 hour
b. 1/2 hour
c. 2/3 hour
d. 1 hour

_____18. The rectangle shown in the figure is divided into 6 equal squares. If the perimeter of the rectangle is 42 cm, what is the area of each square in cm^2 ?



a. 6
b. 9
c. 12
d. 15

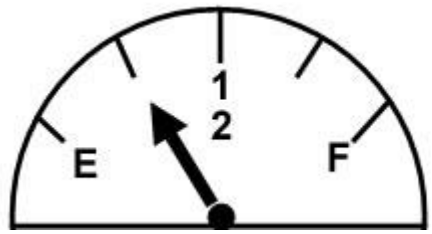
____19. If the area of the rectangle ABCD shown below is 36 units, how many square units is the area of the shaded region?



a. 12

b. 16
c. 18
d. 24

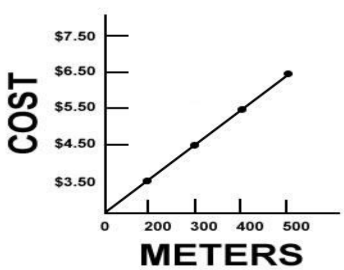
__________20. This tank holds 48 liters of gasoline and the car averages 5 kilometers per liter. Approximately how many kilometers can a car travel this given guage?

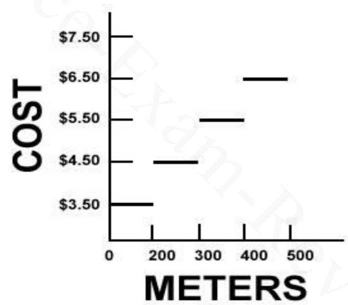


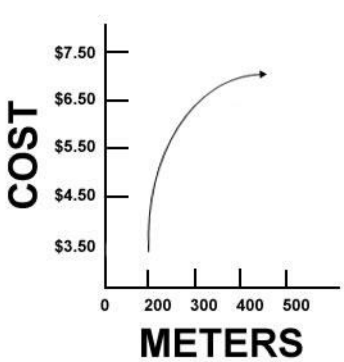
a. 12
b. 24
c. 30
d. 60

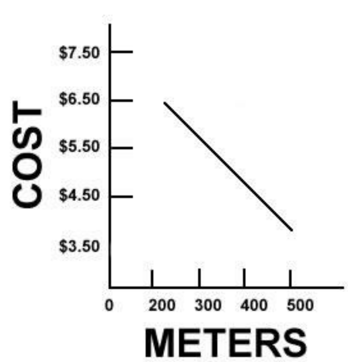
__________21. Which of the following graphs represents the taxi rates for a company that charges $ 3.50 for the first 200 meters and $ 1.00 for each additional 100 meters?

a.









__________22. A laboratory assistant was preparing a solution that should have included 40 milligrams of chemical. If he actually used 41.30 milligrams, what was his percentage error (to the nearest 0.01 %)?

a. 0.0325%
b. 0.325%
c. 3.25%

d. 32.5%

_____23. Menthol drops come in packs of 8 for $ 3.60. Butterballs come in packs of 6 for $ 2.25. Aida bought 48 pieces of candy. How many of each kind of candy did she buy, if she spent $ 19.80?

a. 6 packs of Menthol drops and no Butterballs
b. 3 packs of Menthol drops and 4 packs of Butterballs
c. 8 packs of Butterballs and no Menthol drops
d. Choices A, B, and C are possibilities

Use the following table for questions 24 and 25.

TAX TABLE I						
(FOR COMPENSATION INCOME)						
If taxable income is :				Tax Due is :		
		NOT OVER $	2, 500	0 %		
OVER $	2, 500	BUT NOT OVER $	5, 000	1 %		
OVER $	5, 000	BUT NOT OVER $	10, 000	$ 25 + 3 %	OF EXCESS OVER $	5, 000
OVER $	10, 000	BUT NOT OVER $	20, 000	$ 175 + 7 %	OF EXCESS OVER $	10, 000
OVER $	20, 000	BUT NOT OVER $	40, 000	$ 875 + 11 %	OF EXCESS OVER $	20, 000
OVER $	40, 000	BUT NOT OVER $	60, 000	$ 3, 075 + 15 %	OF EXCESS OVER $	40, 000
OVER $	**60, 000**	**BUT NOT OVER $**	**100, 000**	**$ 6, 075 + 19 %**	**OF EXCESS OVER $**	**60, 000**
OVER $	100, 000	BUT NOT OVER $	250, 000	$ 13,675 + 24 %	OF EXCESS OVER $	100, 000
OVER $	250, 000	BUT NOT OVER $	500, 000	$ 49, 675 + 29 %	OF EXCESS OVER $	250, 000
OVER $	500, 000	BUT NOT OVER $		$ 122,175 + 35 %	OF EXCESS OVER $	500, 000

_____24. How much tax is due on a taxable income of $65, 000?

a. $ 6, 075
b. $ 6, 050
c. $ 6, 094
d. $ 7, 025

_____25. How much tax is due on a taxable income of $55, 000?

a. $ 4, 575
b. $ 5, 325
c. $ 6, 825
d. $ 18, 075

_____26. Anabelle paid $ 19, 675 tax. If x was her income, which of the following statements is TRUE?

a. $ 60, 000 < x < $ 100, 000
b. $ 100, 000 < x < $ 250, 000
c. $ 40, 000 < x < $ 60, 000
d. $ 250, 000 < x < $ 500, 000

_____27. Mang Pablo decided to keep a record of the money he collects from hisnewspaper route. Using the information given, how much money does Mang Pablocollect in the month of February? (Note : Assume that February has 28 days and the February 1 was on a Sunday).

DELIVERY	WEEKLY RATE		NUMBER OF CUSTOMERS	INCOME
Daily Except Sunday	$ 42	x	75	$ 3, 150
Sunday Only	$ 10	x	60	$ 600
all week (daily and Sunday)	$ 52	x	120	$ 6, 240

a. $ 9, 990
b. $ 19, 980
c. $ 39, 960
d. $ 49, 950

_____28. If 10 soldiers can survive for 12 days in 15 packs of rations, how many packs will be needed for 8 men to survive for 18 days?

a. 16 packs
b. 17 packs
c. 18 packs
d. 19 packs

_____29. If it takes Victor twice as long to earn $ 600 as it takes Warnen to earn $ 400, what is the ratio of Victor's per day to Warnen's pay per day?

a. 3 : 1
b. 3 : 2
c. 3 : 4
d. 4 : 3

Use the following table for the question 30 to 32.

TYPE OF VEHICLE - COST OF FUEL FOR 100 - KM TRIP					
car	-	$ 500	truck	-	$ 2, 000
motorcycle	-	$ 175	airplane	-	$ 3, 000
bus	-	$ 875			

_____30. What is the cost of fuel for a 120-km trip by car?

a. $ 400
b. $ 480
c. $ 520
d. $ 600

_____31. If the total wages of a bus driver for 100-km trip is $ 970, and the only cost for a bus are the fuel and the driver's wage. How much should a bus company charge to charter a bus with a driver for a 200-km trip in order to obtain 50% more than the cost?
a. $ 2, 330
b. $ 5, 535
c. $ 2, 720
d. $ 2, 767.50

_____32. If 5 buses, 9 cars, 4 motorcycles make a 100-km trip. What is the average fuel cost per vehicle?
a. $ 521.94
b. $ 526.67
c. $ 531.94
d. $ 516.67

_____33. A store owner bought 2 dozen cans of corned beef at $ 30 each. He sold two-thirds of them at 25% profit but was forced to take a 30% loss on the rest. What was his total profit (or loss) on the item?
a. a loss of $ 48
b. a gain of $ 48
c. no gain or loss
d. gain of $ 4

Use the table below for questions number 34 to 36.

	% OF PROTEIN	% OF CARBOHYDRATES	% OF VITAMINS	COST PER 100 GRAM
Salad A	20	15	40	$ 25.00
Salad B	10	25	30	$ 30.00
Salad C	20	10	50	$ 35.00

_____34. The cost of x purchasing grams of Salad A, y grams of Salad B and z grams if Salad C will be _____.
a. (25x + 30y + 35z) pesos
b. 90 xyz pesos
c. (25x + 30y + 35z) cents
d. (5x + 6y + 7z) dollars

_____35. Which of the following diets would supply the most grams of vitamins?
a. 500 grams of Salad A
b. 400 grams of Salad B
c. 200 grams of Salad A, 100 grams of Salad B and 200 grams of Salad C
d. 200 grams of Salad A, 50 grams of Salad B and 200 grams of Salad C

_____36. All of the following diets would supply at least 85 grams of carbohydrates. Which of the diets costs the least?
a. 100 grams of Salad A, 200 grams of Salad B and 300 grams of Salad C.
b. 300 grams of Salad A, 100 grams of Salad B and 200 grams of Salad C.

c. 200 grams of Salad A, 100 grams of Salad B and 300 grams of Salad C.
d. 100 grams of Salad A, 300 grams of Salad B and 200 grams of Salad C.

__37. If jackfruits are twice as expensive as watermelons, and watermelons are one-third as expensive as durians. What is the ratio of the price of one jackfruit to one durian?

a. 3 : 2
b. 2 : 3
c. 6 : 1
d. 1 : 6

_____38. A retailer buys a pack of sugar from Uniwide Sales for $459. He then marks up the price by 1/3 and sells it at a discount of 16 and 2/3 %. What was his profit in this item?
a. $ 153
b. $ 102
c. $ 26.50
d. $ 51.00

_____39. Forrest Gamp walks down the road for 30 minutes at a rate of 3 mph. He waits 10 minutes for a bus, which brings him back to his starting point at 4 : 25. If he began his walk at 3:35 the same afternoon, what was the average speed on the bus?
a. 3 mph
b. 4.5 mph
c. 7.5 mph
d. 9 mph

_____40. Miss Felisa Gascon had $ 2 million to invest. She invested part of it at 4% a year and the remainder at 5% per year. After one year she earned $ 95, 000 in interest. How much of the original investment was placed at 5% rate?
a. $ 900,000
b. $ 1,250,000
c. $ 1,500,000
d. $ 1,600,000

__41. Which of the following is NOT a possible remainder if a positive integer is divided 5

a. 0
b. 1
c. 3
d. 5

_____42. In a building plan, 1/4 cm represents 2 meters. If the main entrance is supposed to be 8 meters wide, how would its representation be on the plan?
a. 1 cm
b. 1/2
c. 2 cm
d. 1/16 cm

_____43. A real estate agent marks a certain property up 40% above the original cost. Then he gives a client a 15% discount. If the final selling price of the property was $8.619 M, what was the original cost of the property?
a. $ 6.63 M
b. $ 7.26 M
c. $ 7.8 M
d. $ 99.12 M

_____44. If 2/3 the perimeter of a square is 16, then what is the length of one of its sides?
a. 6
b. 8
c. 9

d. 12

_____45. What values of x can satisfy the equation (3x + 6) (2x - 8) = 0?
a. -4 and 2 only
b. 4 only
c. -2 only
d. -2 and 4 only

_____46. If 8 men can plant 288 trees in one day, how many trees can 12 men plant in 5 days?

a. 432
b. 960
c. 1,800
d. 2,160
_____47. If the length of a rectangle is increased by 25% and its width is decreased by 20%, what happens to the area of the rectangle?
a. increase by 5%
b. decrease by 5%
c. increase by 45%
d. no change
_____48. The formula for the volume of a sphere is $V = 4/3\ \pi^3$. If the radius (r) is tripled, what will be the ratio of the new volume to the original volume?
a. 1 : 3
b. 3 : 1
c. 9 : 1
d. 27 : 1
_____49. The scale on a map is 1 : 8. If a surveyor reads a certain measurement on the map as 4.6 cm instead of 5.0 cm, what will be the resulting approximate percent error on the full size model?
a. 4%
b. 8%
c. 64%
d. 93%
_____50. In a certain recipe, 225 grams of beef are called for to make 6 servings. If Mrs. Alferez wants to use the recipe for 8 servings, how many grams of beef must she use?
a. 275 grams
b. 300 grams
c. 337.5 grams
d. 400 grams

MATH TEST 005 WITH ANSWERS AND EXPLANATIONS

1. What number is as much more than 8 as it is less than 32 ?

Let x - be the number

$x - 8 = 32 - x$
$x + x = 32 + 8$
$2x = 40$
$x = 40 / 2$
$x = 20$ * Ans.

---

2. A container van that is 3 meters wide, 5 meters long and 4 meters high will transport 200 crates whose volume is 6 cubic meters. How many trips will it take to transport all the crates?

Let N - be the number of trips

$$\text{No. of trips} = (\text{No. of crates}) \times \frac{\text{volume}}{\text{crate}} \times \frac{1 \text{ trip}}{\text{volume of the van}}$$

$$N = 200 \text{ crates} \times \frac{6 \text{ m}^3}{\text{crate}} \times \frac{1 \text{ trip}}{(3 \times 5 \times 4)\text{m}^3}$$

$$N = \frac{(200)(6)}{3 \times 4 \times 5}$$

$$N = \frac{1200}{60}$$

N = 20 trips * Ans.

---

3. A rectangular block of copper, with dimensions 4m x 6m x 9m, is melted and recast into a cubical block. Find the length of the side of the cubical block.

$V_{\text{cubical block}} = V_{\text{rectangular block}}$

$S^3 = (4 \times 6 \times 9)\ m^3$

$S^3 = 216\ m^3$

$S = \sqrt[3]{216\ m^3}$

S = 6m * Ans.

---

4. There are 9 male teachers for every 14 female teachers. If there are 69 teachers in all, how many teachers are female?

$$\frac{9 : 14}{23} = \frac{\text{Male : Female}}{69}$$

No. of Female teachers = (69 / 23) x 14

= 3 x 14
= 42 * Ans.

---

5. What would be the closest approximation to $\sqrt{66}$?

$\sqrt{64} = 8$

$\sqrt{66} \cong 8.1$ * Ans.

6. Manny can do a certain job in 1 day, Anna can do the same job in 2 days, and Josie cando the job in 3 days. How many days will it take them to do the job if they work together?

One 1 day Manny can finish the whole job
Anna can finish 1/2 of the same job
Josie can finish 1/3 of the same job

Let N - be the days that it takes to finish the job if they work together.

$\left(\frac{1}{1} + \frac{1}{2} + \frac{1}{3}\right) N = 1$

$\left(\frac{6 + 3 + 2}{6}\right) N = 1$

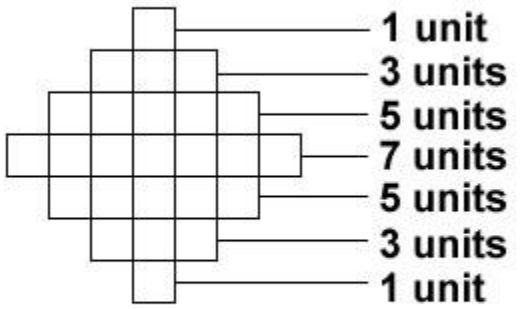
$\frac{11}{6} N = 1$

$N = 1 \times \frac{6}{11}$ (reciprocal of 11 / 6)

N = 6 / 11 day * Ans.

---

7. In the figure, all the line segments meet at right angles and each segments has a length of 1 unit. What is the area of the figure in square units?



25 units * Ans.

---

8. If x - 3 = y, then $(y - x)^3$ = _____ ?

If x - 3 = y;

-3 = y - x
$(-3)^3 = (y - x)^3$
$-27 = (y - 3)^3$ * Ans.

---

9. A speed of 90 km per hour is equivalent to how many meters per second?

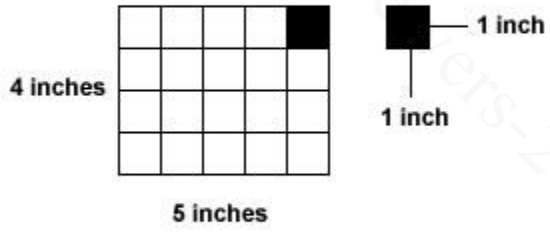
$$= \frac{90\ km}{hr} \times \frac{1\ hr}{3600\ sec} \times \frac{1000\ m}{km}$$

$$= \frac{90 \times 1000}{3600}\ \frac{m}{hr}$$

$$= 25\ \frac{m}{sec}$$ * Ans.

---

10. A rectangular sheet of cardboard 5 inches long and 4 inches wide is cut into squares one inch on a side. What is the maximum number of such squares that can be formed?



There are 20 squares * Ans

11. A housewife bought 3 kilograms of beef priced at $ 108.75 per kilogram. How much change did she receive from a five-hundred dollar bill?

Change = $ 500 - (3 x $ 108.75)
= $ 500 - $ 326.25
= $ 173.75 * Ans.

---

12. A delivery of 480 baskets of mangoes is divided into two fruit stands so that the difference between the two orders is 1/3 their average. What is the ratio of the smaller to the larger amount?

Let x - be the no. of baskets in the fruit stand.
Let 480 - x be the number in the second fruit stand.

(480 - x) - x = $\frac{1}{3}$ ($\frac{x + y}{2}$) ------> 480 - 2x = 80

------> 2x = 480 - 80

------> 2x = 400

but x + y = 480 $\frac{1}{3}$ ($\frac{480}{2}$) ------> x = 200 480 - x = 280

since the total delivery = 480

The ratio is $\frac{200}{40}$: $\frac{280}{40}$ **= 5 : 7 * Ans.**

---

13. When the first and the last digits of 2, 836 are interchanged, the new number is _____.

6,832 -----> the new number
6,832 - 2836 = 3996

therefore, the new number is 3,996 more than 2,836 * Ans.

---

14. If twice the value of a certain number is increased by 8 the result is 40. What is the number?

Let x - be the number

2x + 8 = 40
2x = 40 -8
2x = 32
x = 32 / 2
x = 16 * Ans

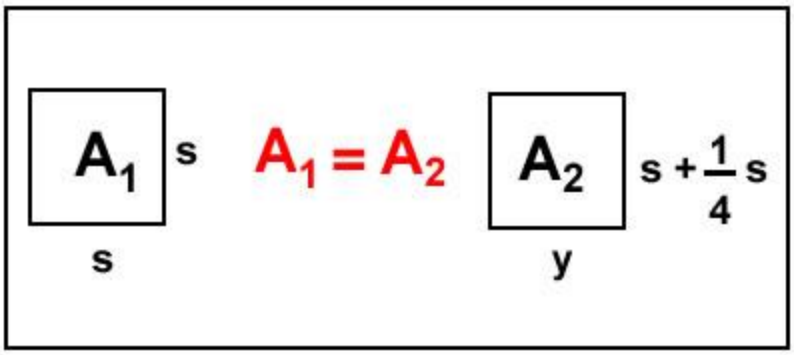
---

15. In a group of 120 persons, there are 32 more women than men. How many women are there in the group?

Let x - be the number of women
Let x - 32 be the number of men

x + (x - 32) = 120
2x - 32 = 120
2x = 120 + 32
2x = 152
x = 152 / 2
x = 76 women * Ans.

16. If the dimensions of a square change in such a manner that the area remains constant, what must happen to the other side if one side will be increased by 1/4 of itself?



$(s + \frac{1}{4}s)\, y = s\,(s)$

$\frac{5}{4}(s)(y) = s^2$

$y = s^2 \left(\frac{4}{5s}\right)$

$y = \frac{4}{5}s$

$s = -\frac{4}{5}s = \frac{1}{5}s$

therefore, it decreased by 1/5 of itself * Ans.

---

17. A man rowed 4 miles upstream for 2 hours. If the river flowed with a current of 2 miles per hour, how long did the man's return trip take?

Let x - be the rate of the boat in still water
Let 2x - be the rate of the boat upstream
Let 2 mph - be the rate of the current
Let (x + 2) - speed of the boat downstream

$rate_{up}$ x time = distance

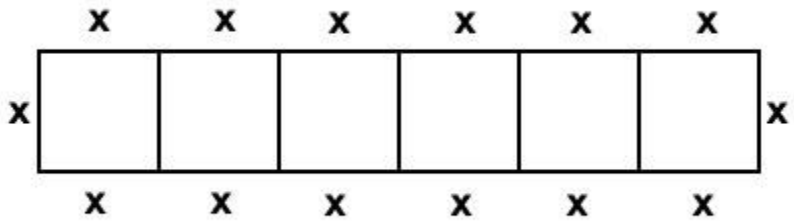
(x - 2) (2) = 4
2x - 4 = 4
2x = 4 + 4
2x = 8
x = 4 miles / hr

$rate_{down}$ x time = distance

(x+2) (time) = 4
(4+2) (time) = 4
6 (time) = 4
time = 4 / 6
time = 2 / 3 hrs. * Ans.

---

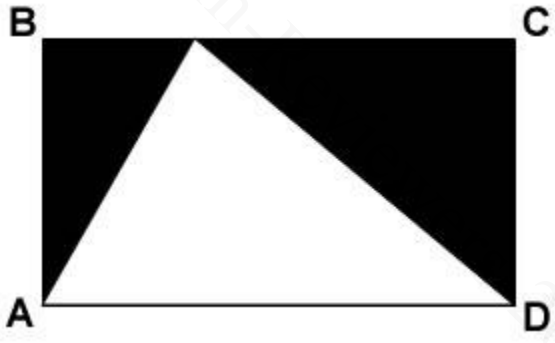
18. The rectangle shown in the figure is divided into 6 equal squares. If the perimeter of the rectangle is 42 cm, what is the area of each square in cm^2 ?



14x = 42
x = 42 / 14
x = 3 cm.

Area of the squares = x^2
= $(3\ cm)^2$
= 9 cm^2 * Ans.

19. If the area of the rectangle ABCD shown below is 36 square units, how many square units is the area of the shaded region?

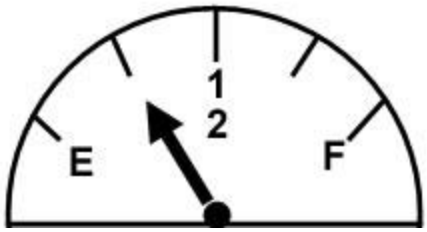


$A_{rectangle}$ = bh
$A_{rectangle}$ = 36
bh = 36

$A_{triangle}$ = 1/2 bh
= 1/2 (36)
= 18 sq. units * Ans.

---

20. This tank holds 48 liters of gasoline and the car averages 5 kilometers per liter. Approximately how many kilometers can a car travel this given guage?



The guage indicates that the tank is 1/4 full.

Let N - be the number of kilometers that can be traveled.

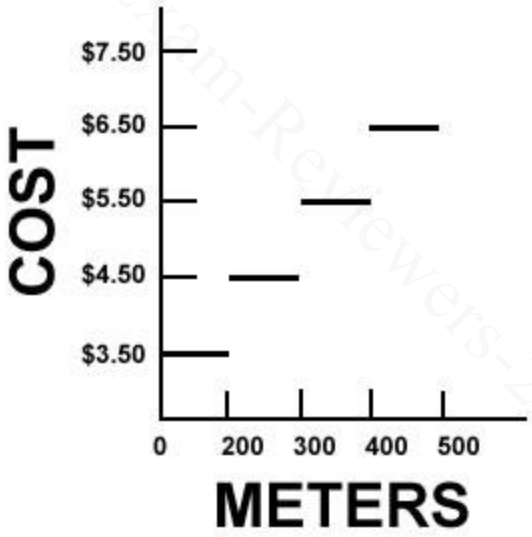
$$N = \left(\frac{1}{4}\text{ tank}\right) \times \frac{48\text{ liters}}{\text{tank}} \times \frac{5\text{ km}}{\text{liter}}$$

$$= 1/4 \times 48 \times 5\text{ km}$$
$$= 60\text{ km.}$$ * Ans

---

21. Which of the following graphs represents the taxi rates for a company that charges $ 3.50 for the first 200 meters and $ 1.00 for each additional 100 meters?

This is the approximate graph for the taxi rate, there is an abrupt change in the fare for every 100 meters change in the distance.



*** Ans.**

---

22. A laboratory assistant was preparing a solution that should have included 40milligrams of chemical. If he actually used 41.30 milligrams, what was his percentage error (to the nearest 0.01 %)?

$$\%\text{ error} = \frac{\text{error}}{\text{correct value}} \times 100\%$$

$$= \frac{41.30 - 40}{40} \times 100\%$$
$$= \frac{1.3}{40}\ \%$$
$$= 130\ \%$$

40

= 3.25 % * Ans

23. Menthol drops come in packs of 8 for $ 3.60. Butterballs come in packs of 6 for $ 2.25. Aida bought 48 pieces of candy. How many of each kind of candy did she buy, if she spent $ 19.80?

b. 3 packs of Menthol drops and 4 packs of Butterballs.

= (3 x $ 3.60) + (4 x $2.25)
= $ 10.80 + $ 9.00
= $ 19.80 * Ans.

Use the following table for questions 23 and 24.

TAX TABLE I						
(FOR COMPENSATION INCOME)						
If taxable income is :				Tax Due is :		
		NOT OVER $	2, 500	0 %		
OVER $	2, 500	BUT NOT OVER $	5, 000	1 %		
OVER $	5, 000	BUT NOT OVER $	10, 000	$ 25 + 3 %	OF EXCESS OVER $	5, 000
OVER $	10, 000	BUT NOT OVER $	20, 000	$ 175 + 7 %	OF EXCESS OVER $	10, 000
OVER $	20, 000	BUT NOT OVER $	40, 000	$ 875 + 11 %	OF EXCESS OVER $	20, 000
OVER $	40, 000	BUT NOT OVER $	60, 000	$ 3, 075 + 15 %	OF EXCESS OVER $	40, 000
OVER $	**60, 000**	**BUT NOT OVER $**	**100, 000**	**$ 6, 075 + 19 %**	**OF EXCESS OVER $**	**60, 000**
OVER $	100, 000	BUT NOT OVER $	250, 000	$ 13,675 + 24 %	OF EXCESS OVER $	100, 000
OVER $	250, 000	BUT NOT OVER $	500, 000	$ 49, 675 + 29 %	OF EXCESS OVER $	250, 000
OVER $	500, 000	BUT NOT OVER $		$ 122,175 + 35 %	OF EXCESS OVER $	500, 000

---

24. How much tax is due on a taxable income of $65, 000?

Tax due = $6, 075 + 0.19 ($65,000 - $60,000)
= $6, 075 + 0.19 ($5,000)
= $6, 075 + $950
Tax due = $7, 025 * Ans.

---

25. How much tax is due on a taxable income of $55, 000?

Tax due = $3, 075 + 0.15 ($55,000 - $40,000)
= $3, 075 + 0.15 ($15,000)

= $3, 075 + $2,250
Tax due = $5, 325 * Ans.

26. Anabelle paid $ 19, 675 tax. If x was her income, which of the following statements is TRUE?

b. $ 19, 675 tax due belongs to this range * Ans.

Over $ 100, 000 but not over $ 250, 000
$ 13, 675 + 24% of excess over $ 100, 000

therefore, Anabelle's income is between $ 100,000 and $ 250,000

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27. Mang Pablo decided to keep a record of the money he collects from his newspaper route. Using the information given, how much money does Mang Pablo collect in the month of February? (Note : Assume that February has 28 days and the February 1 was on a Sunday).

DELIVERY	WEEKLY RATE		NUMBER OF CUSTOMERS	INCOME
Daily Except Sunday	$ 42	x	75	$ 3, 150
Sunday Only	$ 10	x	60	$ 600
all week (daily and Sunday)	$ 52	x	120	$ 6, 240

* Ans - Total $ 9, 990

---

28. If 10 soldiers can survive for 12 days in 15 packs of rations, how many packs will be needed for 8 men to survive for 18 days?

Let N - be the number of packs

$$\frac{N \text{ packs}}{8 \text{ men} \times 18 \text{ days}} \text{ -----> } \frac{15 \text{ packs}}{10 \text{ men} \times 12 \text{ days}} \text{ ---> } N = \frac{15}{10 \times 12} \times (8 \times 18) \text{ packs}$$

N = 18 packs * Ans.

---

29. If it takes Victor twice as long to earn $ 600 as it takes Warnen to earn $ 400, what isthe ratio of Victor's per day to Warnen's pay per day?

Warnen earns 400 in x days
Victor earns 600 in 2x days
Therefore he earns 300 in 2x days

The ratio of Victor's pay to
Warnen's pay in x days is 400 : 300 or 4 : 3 * Ans

Use the following table for questions no. 30 - 32.

TYPE OF VEHICLE - COST OF FUEL FOR 100 - KM TRIP					
car	-	$ 500	motorcycle	-	$ 175
bus	-	$ 875	truck	-	$ 2,000
airplane	-	$ 3, 000			

30. What is the cost of fuel for a 120-km trip by car?

Cost of fuel = 120 km x $\frac{\$\ 500}{100\ km}$ ----> 120 x $ 5 -----> $ 600 *Ans.

---

31. If the total wages of a bus driver for 100-km trip is $ 970, and the only cost for a bus are the fuel and the driver's wage. How much should a bus company charge to charter a bus with a driver for a 200-km trip in order to obtain 50% more than the cost?

Cost for a 100-km trip = $C_{fuel} + C_{drives}$ -------> 875 + 970 -------> $ 1,845

Total Cost = ($\frac{\$\ 1,845}{100\ km}$ x 200 km) x 1.50 -------> $ 5, 535 * Ans.

---

32. If 5 buses, 9 cars, 4 motorcycles make a 100-km trip. What is the average fuel cost pervehicle?

Average Cost = $\frac{\text{total cost of fuel}}{\text{total no. of vehicle}}$ ----> $\frac{(5 \times \$\ 875) + (9 \times \$\ 500) + (4 \times \$\ 175)}{5 + 9 + 4}$

$\frac{\$\ 4375 + \$\ 4500 + \$\ 700}{5 + 9 + 4}$ ------> $ $\frac{9575}{18}$ ----> $ 531.94 * Ans

---

33. A store owner bought 2 dozen cans of corned beef at $ 30 each. He sold two-thirds of them at 25% profit but was forced to take a 30% loss on the rest. What was his total profit (or loss) on the item?

Total Selling Price

= [$\frac{2}{3}$ (24 cars) x $ $\frac{30}{car}$ x (1 + 0.25)] + [$\frac{1}{3}$ (24 cars x $\frac{\$\ 30}{car}$) (1 - 0.30)]

= [$\frac{2}{3}$ (24) x $ 30(1.25)] + [$\frac{1}{3}$ (24)($ 30)(0.70)]

Total Selling Price = $ 600 + $ 168
= $ 768

Total cost = $\frac{\$30}{car}$ x 24 cars = $720

Gain = Total selling price - Total cost
= $ 768 - $ 720
= $ 48 * Ans.

Use the table below for questions no. 34 - 36.

	% OF PROTEIN	% OF CARBOHYDRATES	% OF VITAMINS	COST PER 100 GRAM
Salad A	20	15	40	$ 25.00
Salad B	10	25	30	$ 30.00
Salad C	20	10	50	$ 35.00

---

34. The cost of x purchasing grams of Salad A, y grams of Salad B and z grams of Salad C will be _____.

Cost of Salad A = $ 200 / 100 gm x x gm x 100¢ / P 1,000 = 25x ¢

Cost of Salad B = $ 30 / 100 gm x y gm x 100¢ / P 1,000 = 30y ¢

Cost of Salad C = $ 35 / 100 gm x z gm x 100¢ / P 1,000 = 35z ¢

therefore, the total cost is (25x + 30y + 35z) cents * Ans.

---

35. Which of the following diets would supply the most grams of vitamins?

c. Salad A + 50g Salad B + (300 g) Salad C

= 0.40 (200) + 0.30 (100) + 0.50 (200) ----> 80 + 30 + 100 ----> 210 gms * Ans.

---

36. All of the following diets would supply at least 85 grams of carbohydrates. Which of the diets costs the least?

b. $ 25 (3) + $ 30 (1) + $ 35 (2)
$ 75 + $ 30 + $ 70 = $ 175 * Ans.

37. If jackfruits are twice as expensive as watermelons, and watermelon is one-third as expensive as durians. What is the ratio of the price of one jackfruit to one durian?

Let x - be the cost of watermelon
Let 2x - be the cost of the jackfruit
Let 3x - be the cost of the durian

= Jackfruit : Durian
= 2x : 3x
= 2 : 3 * Ans.

---

38. A retailer buys a pack of sugar from Uniwide Sales for $ 459. He then marks up the price by 1/3 and sells it at a discount of 16 2/3 %. What was his profit in this item?

Marked price = $ 459 + 1/3 ($ 459) ----------> 459 + $ 153 -------> $ 612

Discounted Price = $ 612 - 16 % ($ 612) ---------> $ 612 - 1/6 ($ 612) ------> $ 510

Profit = Selling Price - Cost

= $ 510 - $ 459
= $ 51 * Ans.

---

39. Forrest Gump walks down the road for 30 minutes at a rate of 3 MPH. He waits 10 minutes for a bus, which brings his back to his starting point at 4 : 25. If he begun his walk at 3 : 35 the same afternoon, what was the average speed on the bus?

d_{walked} = rate x time

= 3 $\frac{mi.}{hr.}$ x $\frac{1}{2}$ hr. -------> d_{walked} = 1.5 miles

$time_{travelled\ by\ the\ bus}$ = 4:25 - 3:35 - :30 - :10 -------> 10 mins ----> 1/6 hr.

$speed_{of\ the\ bus}$ = $\frac{distance}{time}$ ---------> $\frac{1.5\ minutes}{1/6\ hr}$ ---> (1.5 x 6) mi/hr ---> 9 mi/hr * Ans.

---

40. Miss Felisa Gascon had $ 2 million to invest. She invested part of it at 4% a year and the remainder at 5% per year. After one year she earned $ 95, 000 in interest. How much of the original investment was placed at 5% rate?

Let x - be the amount of invested at 5%
Let 2,000,000 - x be the amount invested at 4%

0.05x + 0.04 (2,000,000 - x) = 95000
0.05x + 80000 - 0.04x = 95000
0.01x = 95000 - 80000
0.01x = 15000
x = 15000 / 0.01
x = 1, 500, 000 * Ans.

integer is divided 5?

The possible remainders are 0, 1, 2, 3, 4,

therefore, 5 is not a possible remainder * Ans.

---

42. In a buidling plan, 1/4 cm represents 2 meters. If the main entrance is supposed to be 8 meters wide, how wide would its representation be on the plan?

Let N - be the representation of the plan

1/4 : 2 = N : 8

2N = (1/4) (8)
2N = 8/4
2N = 2

N = 2/2
N = 1 cm. * Ans.

---

43. A real state agent marks a certain property up 30% above the original cost. Then he gives a client a 15% discount. If the final selling price of the property was $8.619 M, what was the original cost of the property?

Let x - be the original cost

(x + 0.30x) (1 - 0.15) = $8.619 M
(1.30x) (0.85) = $8.619 M
1.105x = $8.619 M
x = $8.619 M / 1.105
x = 7.8 M * Ans.

---

44. If 2/3 the perimeter of a square is 16, then what is the length of one of its sides?

2/3 P = 16
P = 16 (3/2)
P = 48/2
P = 24

Perimeter formula for SQUARE is P = 4$.

P = 4$
24 = 4$
24 = 4$
24/4 = $
6 = $

therefore, $ = 6 * Ans.

---

45. What values of x can satisfy the equation (3x + 6) (2x - 8) = 0 ?

3x + 6 = 0
3x = -6
x = -6 / 3
x = - 2

2x - 8 = 0
2x = 8
x = 8 / 2
x = 4 * Ans.

46. If 8 men can plant 288 trees in one day, how many trees can 12 men plant in 5 days?

Let N - be the number of trees

$$N = \frac{288 \text{ trees}}{8 \text{ men - 1 day}} \times 12 \text{ men} \times 5 \text{ days} \quad \text{-----> } \frac{288 \times 12 \times 5}{8} \text{ trees}$$

N = 2, 160 trees * Ans.

---

47. If the length of a rectangle is increased by 25% and its width is decreased by 20%, what happens to the area of the triangle?

$A_{orig.} = LW$

$A_{new} = L\ (1+0.25) \times W\ (1 - 0.20)$
$= L\ (1.25) \times W\ (0.8)$ -----> $(1.25)\ (0.8)\ LW$
$A_{new} = 1 \times LW$
$A_{new} = A_{orig.}$

therefore, no change in the area * Ans.

---

48. The formula for the volume of a sphere is $V = 4/3\ \pi r^3$. If the radius (r) is tripled, what will be the ratio of the new volume to the original volume?

$V_{orig.} = 4/3\ \pi r^3$

$V_{new} = 4/3\ \pi(3r)^3$ -----> $= 4/3\ \pi(27r^3)$ ------> $27\ (4/3\ \pi r^3)$
$V_{new} = 27\ V_{orig.}$ -----> $V_{new} : V_{orig.} = 27 : 1$ * Ans.

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49. The scale on a map is 1 : 8. If a surveyor reads a certain measurement on the map as 4.6 cm instead of 5.0 cm, what will be the resulting approximate percent error on the full size model?

$$\%\ error = \frac{error}{correct\ value} \times 100\% \rightarrow \frac{5.0 - 4.6}{5.0} \times 100\% \rightarrow \frac{0.4}{5} \times 100\% \rightarrow 8\%$$ *Ans.

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50. In a certain recipe, 225 grams of beef are called for to make 6 servings. If Mrs. Alferez wants to use the recipe for 8 servings, how many grams of beef must she use?

Let N - be the number of grams required

$225 : 6 = N : 8$

$6N = 8(225)$
$6N = 1800$
$N = 1800 / 6$
$N = 300$ grams. * Ans.