MATH 9 SEPTEMBER REVIEW

Show all work/answers on a separate sheet of paper. Work must be shown in an organized manner to receive credit for this review assignment.

1. a) What is a prime number?

A number divisible by 1 & itself only.

b) List the prime numbers from 2 to 50.

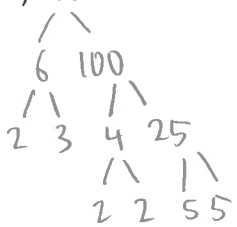
2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47

2. List 5 composite numbers.

4, 6, 8, 9, 10, 12 etc

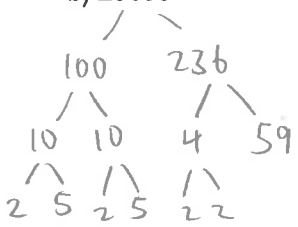
3. Write the prime factorization of the following numbers. Use a factor tree.

a) 600



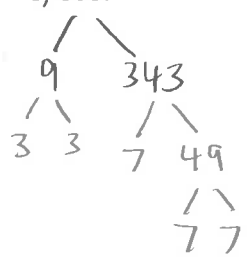
$= \boxed{2^3 \cdot 3 \cdot 5^2}$

b) 23600



$\boxed{= 2^4 \cdot 5^2 \cdot 59}$

c) 3087



$= \boxed{3^2 \cdot 7^3}$

4. Write the factors of:

a) 64 = {1, 2, 4, 8, 16, 32, 64}

b) 70 {1, 2, 5, 7, 10, 14, 35, 70}

c) 36 {1, 2, 3, 4, 6, 9, 12, 18, 36}

5. Write the first 10 multiples of:

a) 6 6, 12, 18, 24, 30, 36, 42, 48, 54, 60

b) 15 15, 30, 45, 60, 75, 90, 105, 120, 135, 150

6. Find the GCF and LCM for:

a) 14, 35

7 | 14, 35
2, 5

GCF = 7
LCM = 7×2×5 = 70

b) 18, 32

2 | 18, 32
9, 16

GCF = 2
LCM = 2×9×16 = 288

c) 12, 18, 15

3 | 12, 18, 15
2 | 4, 6, 5
2, 3, 5

GCF = 3
LCM = 3×2×2×3×5 = 180

7. Write all perfect squares up to 400.

1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400

8. Evaluate: (use info from #7)

a) $\sqrt{121} = \boxed{11}$

b) $\sqrt{361} = \boxed{19}$

c) $\sqrt{1} = 1$

d) $\sqrt{\frac{100}{81}} = \frac{\sqrt{100}}{\sqrt{81}} = \boxed{\frac{10}{9}}$

e) $\sqrt{144} = \boxed{12}$

f) $\sqrt{16900} = \boxed{130}$

$\sqrt{169}$ $\sqrt{100}$

13 · 10

g) $\sqrt{0.0049} = \sqrt{\frac{49}{10000}} = \boxed{\frac{7}{100}}$

h) $\sqrt{1.96} = \sqrt{\frac{196}{100}} = \frac{14}{10} = \boxed{\frac{7}{5}}$

i) $\sqrt{169} = \boxed{13}$

j) $\sqrt{0.01} =$

$\sqrt{\frac{1}{100}} = \frac{\sqrt{1}}{\sqrt{100}} = \boxed{\frac{1}{100}}$

k) $\sqrt{\frac{25}{49}} = \frac{\sqrt{25}}{\sqrt{49}} = \boxed{\frac{5}{7}}$

l) $\sqrt{44100}$

441 $\sqrt{100}$

$\sqrt{9}$ $\sqrt{49}$

$= 3 \cdot 7 \cdot 10$

$= \boxed{210}$

9. Estimate to the nearest tenth.

a) $\sqrt{5} =$ ($\sqrt{4}$ $\sqrt{9}$)

$\approx 2\frac{1}{5} = \boxed{2.2}$

b) $\sqrt{28} =$ ($\sqrt{25}$ $\sqrt{36}$)

$\approx 5\frac{3}{11} = \boxed{5.3}$

11 | 3.0 = .27, 22, 80, 77

c) $\sqrt{140} =$ ($\sqrt{121}$ $\sqrt{144}$)

144 − 121 = 23

$\approx 11\frac{19}{23} = \boxed{11.8}$

23 | 19.0 = .82, 184, 60, 46

d) $\sqrt{380} =$ ($\sqrt{361}$ $\sqrt{400}$)

$\approx 19\frac{19}{39} \approx \boxed{19.5}$

400 − 361 = 39

380 − 361 = 19

39 | 19.0 = .48, 156, 340, 312, 28

10. Evaluate:

a) $-5 - 8 = \boxed{-13}$

b) $(-28) \div (-7) = \boxed{4}$

c) $(-9+5)(-4-3) =$

$= (-4)(-7) = \boxed{28}$

d) $-10 + (-13) =$

$= -10 - 13 = \boxed{-23}$

e) $-5(-4)(-1) =$

$= \boxed{-20}$

f) $4(5) \div (-2) =$

$= 20 \div (-2) = \boxed{-10}$

g) $4 - (-6) =$

$= 4 + 6 = \boxed{10}$

h) $-9 + (-2) - (-5) =$

$= -9 - 2 + 5$

$= -11 + 5 = \boxed{-6}$

i) $-3 - 2[4 - (-1)(-3)] =$

$= -3 - 2[4 - (3)] = -3 - 2(1) = -3 - 2 = \boxed{-5}$

j) $14 \div (-2) = \boxed{-7}$

k) $4 - 3(1 - 2) =$

$= 4 - 3(-1)$

$= 4 + 3 = \boxed{7}$

l) $-2(1-4) - 3(4-6) =$

$= -2(-3) - 3(-2)$

$= 6 + 6 = \boxed{12}$

11. Simplify into lowest terms.

a) $\frac{135}{10} = \boxed{\frac{27}{2}}$ (5 | 135 = 27)

b) $\frac{15}{30} = \boxed{\frac{1}{2}}$

c) $\frac{49}{56} = \boxed{\frac{7}{8}}$

d) $\frac{240}{600} = \frac{24}{60} = \frac{4}{10} = \boxed{\frac{2}{5}}$

12. Change from a mixed fraction into an improper.

a) $1\frac{2}{3} = \boxed{\frac{5}{3}}$

b) $4\frac{3}{5} = \boxed{\frac{23}{5}}$

c) $5\frac{1}{2} = \boxed{\frac{11}{2}}$

d) $10\frac{2}{5} = \boxed{\frac{52}{5}}$

13. Change from improper fraction into a mixed fraction.

a) $\frac{19}{12} = \boxed{1\frac{7}{12}}$

b) $\frac{23}{5} = \boxed{4\frac{3}{5}}$

c) $\frac{48}{7} = \boxed{6\frac{6}{7}}$

d) $\frac{39}{19} = \boxed{2\frac{1}{19}}$

14. Evaluate. Put your answer in simplified form.

a) $\frac{2}{3}^{\times 2} + \frac{1}{2} = \frac{4}{6} + \frac{3}{6} = \boxed{\frac{7}{6}}$

b) $\frac{1}{2} + 3 = 3\frac{1}{2} = \boxed{\frac{7}{2}}$

c) $\frac{1}{8}^{\times 3} + \frac{5}{6}^{\times 4} - \frac{1}{2}_{\times 12} = \frac{3}{24} + \frac{20}{24} - \frac{12}{24}$

$= \boxed{\frac{11}{24}}$

d) $\frac{3}{1} - \frac{1}{4} = \frac{12}{4} - \frac{1}{4} = \boxed{\frac{11}{4}}$

e) $1\frac{5}{2} + 3\frac{1}{2} = 4\frac{6}{2} = \boxed{7}$

OR

$= \frac{7}{2} + \frac{7}{2} = \frac{14}{2} = 7$

f) $5 + 3\frac{1}{2} - 1\frac{1}{3} =$

$= 8\frac{1}{2} - 1\frac{1}{3} = \frac{17}{2}^{\times 3} - \frac{4}{3}^{\times 2}$

$= \frac{51}{6} - \frac{8}{6} = \boxed{\frac{43}{6}}$

g) $5 + \frac{1}{2} - \frac{1}{3} =$

$= 5\frac{1}{2} - \frac{1}{3} = \frac{11}{2}^{\times 3} - \frac{1}{3}^{\times 2}$

$= \frac{33}{6} - \frac{2}{6} = \boxed{\frac{31}{6}}$

h) $3\frac{1}{6} + 1\frac{1}{4} = 3\frac{2}{12} + 1\frac{3}{12}$

$= 4\frac{5}{12} = \boxed{\frac{53}{12}}$

i) $\frac{7}{12}^{\times 5} - \frac{1}{15}^{\times 4} = \frac{35}{60} - \frac{4}{60}$

$= \boxed{\frac{31}{60}}$

3 | 12, 15
4, 5

LCM = 3×4×5
= 60

j) $\frac{5}{12}^{\times 3} - \frac{1}{18}^{\times 2} = \frac{15}{36} - \frac{2}{36}$

$= \boxed{\frac{13}{36}}$

6 | 12, 18
2, 3

LCM = 6×2×3
= 36

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

$= \frac{5}{1}^{\times 3} - \frac{4}{3}$

$= \frac{15}{3} - \frac{4}{3} = \boxed{\frac{11}{3}}$

l) $\frac{6}{7} + 1 = 1\frac{6}{7} = \boxed{\frac{13}{7}}$

15. Evaluate. Put your answer in simplified form.

a) $\frac{\cancel{14}^{2}}{\cancel{15}_{1}} \times \frac{\cancel{15}^{1}}{\cancel{49}_{7}} = \boxed{\frac{2}{7}}$

b) $\frac{3}{1} \times \frac{\cancel{8}^{1}}{\cancel{4}_{2}} = \boxed{\frac{3}{2}}$

c) $\frac{2}{5} \div \frac{4}{10} = \frac{\cancel{2}}{\cancel{5}} \times \frac{\cancel{10}^{\cancel{5}}}{\cancel{4}_{\cancel{2}}} = \boxed{1}$

d) $\frac{\cancel{2}^{1}}{3} \times \frac{1}{\cancel{4}_{2}} = \boxed{\frac{1}{6}}$

e) $\frac{5}{1} \times \frac{1}{2} = \boxed{\frac{5}{2}}$

f) $\frac{3}{1} \div \frac{2}{6} = \frac{3}{1} \times \frac{\cancel{6}^{3}}{\cancel{2}} = \boxed{9}$

g) $\frac{\cancel{3}}{\cancel{8}_{1}} \times \frac{\cancel{10}^{2}}{\cancel{15}_{\cancel{3}}} \times \frac{\cancel{16}^{\cancel{2}}}{9} = \boxed{\frac{4}{9}}$

h) $\frac{\cancel{2}^{1}}{\cancel{4}_{2}} \times \frac{7}{1} = \boxed{\frac{7}{2}}$

i) $\frac{13}{1} \div \frac{4}{5} \times 2 =$

$= \frac{13}{1} \times \frac{5}{\cancel{4}_{2}} \times \frac{\cancel{2}^{1}}{1} = \boxed{\frac{65}{2}}$

j) $\frac{1}{2} \times \frac{\cancel{4}^{1}}{\cancel{8}_{\cancel{2}}} \times \frac{\cancel{16}^{\cancel{2}}}{\cancel{8}_{1}} = = \boxed{\frac{1}{2}}$

k) $\frac{3}{1} \div \frac{1}{2} = \frac{3}{1} \times \frac{2}{1} = \boxed{6}$

l) $\frac{3}{1} \div \frac{1}{2} \div \frac{2}{3} = \frac{3}{1} \times \frac{\cancel{2}}{1} \times \frac{3}{\cancel{2}} = \boxed{9}$

m) $\frac{2}{5} \div \frac{2}{1} = \frac{\cancel{2}}{5} \times \frac{1}{\cancel{2}} = \boxed{\frac{1}{5}}$

n) $\frac{\cancel{4}^{1}}{\cancel{18}_{9}} \times \frac{\cancel{25}^{1}}{\cancel{125}_{\cancel{5}}} \times \frac{\cancel{10}^{\cancel{5}}}{\cancel{16}_{4}} = \boxed{\frac{1}{36}}$

16. Simplify.

a) $2 - \frac{1}{2}\left(\frac{3}{3} - \frac{1}{3}\right) = 2 - \frac{1}{\cancel{2}}\left(\frac{\cancel{2}^{1}}{3}\right)$

$= \frac{2}{1} - \frac{1}{3} = \frac{6}{3} - \frac{1}{3} = \boxed{\frac{5}{3}}$

b) $\left(2 + \frac{1}{2}\right) - 3\left(4 + \frac{1}{2}\right) =$

$= 2.5 - 3(4.5)$

$= 2.5 - 13.5$

$= \boxed{-11}$

$\begin{array}{r} 4.5 \\ \times\ 3 \\ \hline 13.5 \end{array}$

c) $\left(\frac{3}{8} + \frac{2}{1}\right) \div \frac{1}{2} = \left(\frac{3}{8} + \frac{16}{8}\right) \div \frac{1}{2}$

$= \frac{19}{\cancel{8}_{4}} \times \frac{\cancel{2}^{1}}{1} = \boxed{\frac{19}{4}}$

d) $5 - 2\left(\frac{4}{3} + \frac{1}{2} \div \frac{3}{1}\right) =$

$= 5 - 2\left(\frac{4}{3} + \frac{1}{2} \times \frac{1}{3}\right)$

$= 5 - 2\left(\frac{4}{3} + \frac{1}{6}\right)$

$= 5 - 2\left(\frac{8}{6} + \frac{1}{6}\right) = 5 - 2\left(\frac{9}{6}\right) = 5 - \frac{\cancel{2}}{1}\left(\frac{3}{\cancel{2}}\right)$

$= 5 - 3 = \boxed{2}$

17. Solve the ~~factoring~~ following equations.

a) $x + 1 = 5$
$-1 \quad -1$
$\boxed{x = 4}$

b) $\frac{2x}{2} = \frac{-10}{2}$
$\boxed{x = -5}$

c) $\left(\frac{1}{2}x = 4\right)2$
$\boxed{x = 8}$

d) $x - 3 = -2$
$+3 \quad +3$
$\boxed{x = 1}$

e) $\frac{-3x}{-3} = \frac{-12}{-3}$
$\boxed{x = 4}$

f) $\left(\frac{-1}{3}x = 5\right)(-3)$
$\boxed{x = -15}$

g) $x + 7 = -9$
$-7 \quad -7$
$\boxed{x = -16}$

h) $\frac{-4x}{-4} = \frac{15}{-4}$
$\boxed{x = \frac{-15}{4}}$

i) $\left(\frac{-2}{3}x = -\frac{4}{1}\right)\frac{-3}{2}$
$\boxed{x = 6}$

j) $x - 11 = -13$
$+11 \quad +11$
$\boxed{x = -2}$

k) $-x = -6$
$\boxed{x = 6}$

l) $\left(\frac{3x}{5} = -2\right)\frac{5}{3}$
$\boxed{x = \frac{-10}{3}}$

18. Solve the following equations.

a) $2x - 1 = 3$

$+1 \quad +1$

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

$\boxed{x=2}$

b) $\frac{1}{2}x - 1 = 3$

$+1 \quad +1$

$(\frac{1}{2}x = 4)2$

$\boxed{x=8}$

c) $3y + 1 = 5$

$-1 \quad -1$

$\frac{3y=4}{3}$

$\boxed{y=\frac{4}{3}}$

d) $-\frac{1}{3}y + 4 = -5$

$-4 \quad -4$

$(-\frac{1}{3}y = -9)(-3)$

$\boxed{y=27}$

e) $-3y + 5 = -4$

$-5 \quad -5$

$\frac{-3y=-9}{-3}$

$\boxed{y=3}$

f) $-3 = 2 - \frac{1}{2}a$

$-2 \quad -2$

$(-5 = -\frac{1}{2}a)(-2)$

$+10 = a$

$\boxed{a=10}$

19. Solve the following equations.

a) $2(x - 1) = 5$

$2x-2=5$

$+2 \quad +2$

$\frac{2x=7}{2}$

$\boxed{x=\frac{7}{2}}$

b) $2(1 - 2x) = -4$

$2-4x=-4$

$-2 \quad -2$

$\frac{-4x=-6}{-4}$

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

c) $-3(x - 1) = 3$

$-3x+3=3$

$-3 \quad -3$

$\frac{-3x=0}{-3}$

$\boxed{x=0}$

d) $-10 = 3 - (1 - x)$

$-10=3-1+x$

$-10=2+x$

$-2 \quad -2$

$-12=x$

$\boxed{x=-12}$

e) $5 = -(1 - x)$

$5=-1+x$

$+1 \quad +1$

$6=x$

$\boxed{x=6}$

f) $\frac{2}{3}(\frac{6}{1} - \frac{6x}{1}) = 4$

$4-4x=4$

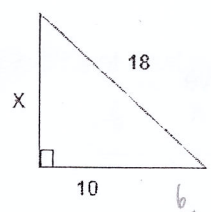
$-4 \quad -4$

$\frac{-4x=0}{-4}$

$\boxed{x=0}$

20. Determine the value of x.

a)



$x^2+10^2=18^2$

$x^2+100=324$

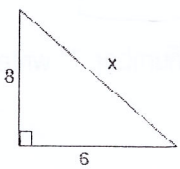
$-100 \quad -100$

$x^2=224$

$x=\sqrt{224}$

$\begin{array}{r} 6 \\ 18 \\ 18 \\ \hline 144 \\ 18 \end{array}$

b)



$8^2+6^2=x^2$

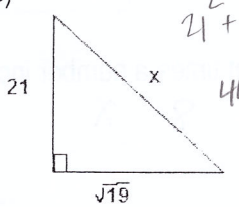
$64+36=x^2$

$100=x^2$

$x=\sqrt{100}$

$\boxed{x=10}$

c)



$21^2+\sqrt{19}^2=x^2$

$441+19=x^2$

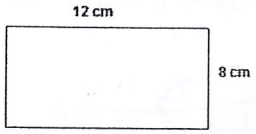
$460=x^2$

$x=\sqrt{460}$

Numbers too small

21. Find the area and the perimeter.

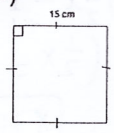
a)



$P=(12+8)2$
$=(20)2$
$P=40\text{ cm}$

$A=12(8)$
$A=96\text{ cm}^2$

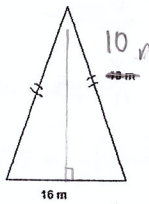
b)



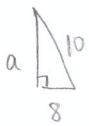
$P=15(4)$
$P=60\text{ cm}$

$A=15(15)$
$A=225\text{ cm}^2$

c)



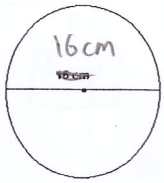
$P=(10)2+16$
$=20+16$
$P=36\text{ m}$



$a^2+8^2=10^2$
$a^2+64=100$
$a^2=36$ $a=6$

$A=\frac{bh}{2}=\frac{16(6)}{2}$
$A=48\text{ m}^2$

d)



$C=\pi d$
$=\pi 16$
$C=16\pi\text{ cm}$
perimeter

$A=\pi r^2$ $r=8$
$=\pi 8^2$
$A=64\pi\text{ cm}^2$

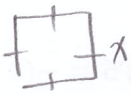
22. Determine:

a) The width and area of a rectangle which has a perimeter of 28 cm and a length of 6 cm.

$P=(l+w)2$
$\frac{28=(6+w)2}{2}$
$14=6+w$
$-6\ -6$
$w=8\text{ cm}$

$A=lw$
$=8(6)$
$A=48\text{ cm}^2$

b) The length and perimeter of a square with an area of 225 cm²



$A=x^2$
$225=x^2$
$x=15\text{ cm}$

$P=4x=4(15)$
$P=60\text{ cm}$

23. When a number is added to twice itself, the result is 45. What is the number? **write an equation first

$x + 2x = 45$

$\frac{3x=45}{3}$
$x=15$

24. Eight times a number increased by 10 is –23. Find the number. ** write an equation first then solve

$8x + 10 = -23$

$8x+10=-23$
$-10\ -10$
$\frac{8x=-33}{8}$
$x=\frac{-33}{8}$

$n \div 7 \quad - \quad 12 = 3+\sqrt{81}$

25. a) When a number is divided by seven and then decreased by 12, the result is 3 more than the square root of 81. Find the number.

$\frac{n}{7} - 12 = 3 + 9$

$\frac{n}{7} - 12 = 12$

$+12 \quad +12$

$\left(\frac{n}{7} = 24\right)7$

$\boxed{n = 168}$

$\begin{array}{r} 24 \\ \times 7 \\ \hline 168 \end{array}$

b) When a number is divided by 3 and then increased by ½, the result is 3. Determine the number.

$n \div 3 \quad + \frac{1}{2} = 3$

$\frac{n}{3} + \frac{1}{2} = 3$

$-\frac{1}{2} \quad -\frac{1}{2}$

$\frac{n}{3} = \frac{3}{1}^{\times 2} - \frac{1}{2}$

$\times 2$

$\frac{n}{3} = \frac{6}{2} - \frac{1}{2}$

$\left(\frac{n}{3} = \frac{5}{2}\right)\frac{3}{1}$

$\boxed{n = \frac{15}{2}}$

26. Mental math:

10% of 250= $0.1\,(250) = \boxed{25}$

$0.5 \times 12 = \boxed{6}$

$2.3 \times 100 = \boxed{230}$

$40 \times 1.2 = \boxed{48}$

$50 \div 0.1 = \boxed{500}$ (÷10)

$50 \times \frac{10}{1}$

$120 \div 100 = \boxed{1.2}$

$0.2 \times 0.02 = \boxed{.004}$

$45 \div 0.1 = \boxed{450}$ (÷10)

$45 \times \frac{10}{1}$

5% of 120= $.05(120) = \boxed{6}$

30% of 400= $\boxed{120}$

0.3×400

$0.5 \times 0.5 = \boxed{0.25}$

$20 \times 0.3 = \boxed{6}$

27. a) What is 45% of 80?

$0.45(80)$

$\begin{array}{r} .45 \\ \times\ 80 \\ \hline 36.00 \end{array}$

$= \boxed{36}$

b) What is $30\frac{3}{2}$% of 400?

$31.5\% = 0.315$

$0.315 \times 400 = \boxed{126}$

28. 30 is what percent of 130?

$\frac{30}{130} = \frac{x}{100}$

$\frac{3(100) = 13x}{13}$

$\boxed{x = 23.1\%}$

b) 12 is what percent of 96?

$\frac{12}{96} = \frac{x}{100}$

$\frac{1}{8} = \frac{x}{100}$

$\frac{8x = 100}{8}$

$\boxed{x = 12.5\%}$

29. 80% of what number is 24?

$\frac{0.8\ x = 24}{0.8}$

$\boxed{x = 30}$

b) 65% of what number is 125?

$\frac{0.65\,(x) = 125}{0.65}$

$\boxed{x \approx 192}$

bad question b/c not whole #

30. Complete the table:

Fraction	Decimal	Percent
$\frac{4}{5}$	0.8	80%
$\frac{125}{1000} = \frac{5}{40} = \frac{1}{8}$	0.125	12.5 %
$1\frac{35}{100} = 1\frac{7}{20}$	1.35	135%
$2\frac{25}{100} = 2\frac{1}{4}$	2.25	225%
$1\frac{2}{3} = \frac{5}{3}$	$3\overline{)5.0}$ = 1.6 $1.\overline{6}$	166.7%

0.25% = 0.0025

31. A survey showed that $\frac{1}{4}$ % of 800 students use inline skates to get to school. 60% of the rest walk to school. The remaining students take the bus. How many student take the bus to school?

0.0025 x 800 = 2 students inline skate

800 - 2 = 798 rest

60% of 798 = 0.6 (798) = 478.8 (???) walk

798 - 478.8 = 319.2 bus

$\boxed{\text{So 319 kids bus}}$

32. A sweater costs $80. It is marked down 20%. Tax is 12%.

a) find the amount of discount

80 x 20%

= 80 x (0.2)

= 16

$\boxed{\$16}$

b) find the selling price

80 - 16

$\boxed{\$64}$

c) find the amount of tax

$64 x 12%

= 64 (0.12)

= $\boxed{\$7.68}$

d) find the final amount of ~~many~~ money you have to pay for the sweater.

= $64 + $7.68

= $\boxed{\$71.68}$

e) find the answer to question d in one or two steps.

= 80 (0.8) 1.12

= $\boxed{\$71.68}$

Original price

% of original price you need to pay

what you pay including 12% tax