



1) Solve:  $\frac{|-3|+|3|-2|-3|}{6-6} =$   
 $\frac{0}{0}$

2) solve:  $(2-3\sqrt{2})(3+2\sqrt{2})$

$6+4\sqrt{2}-9\sqrt{2}-12$   
 $-5\sqrt{2}-6$

-6(2)

3) What is the value of  $x^2 + x^0$  when  $x = 4$ ?

$16+1 = 17$

4) For all  $x$ , which of the following is a factor of  $3x^2 - 10x - 8$ ?

- A.  $x-2$
- B.  $3x-4$
- C.  $3x-2$
- D.  $3x+2$
- E.  $3x+4$

$(3x+2)(x-4)$

75)  $\frac{1}{f} = \frac{1}{p} + \frac{1}{q}$   
 $\frac{1}{f} - \frac{1}{p} = \frac{1}{q}$

LD:  $qpf$

$\frac{qf - pf}{qpf} = \frac{p}{q}$

$\frac{qf - pf}{(q-f)pf} = \frac{p}{q}$

$(3x-2)^2 = (x-5)(9x+4)$

$9x^2 - 12x + 4 = 9x^2 - 41x - 20$

$4 = -29x - 20$

$24 = -29x$

$-\frac{24}{29} = x$

$d^2F = \frac{gM}{r^2} \cdot d^2$

$\frac{Fd}{gM} = \frac{gM}{gM}$

$\frac{(3x+1)}{6x-2} = \frac{2x+5}{(4x-13)}$

$(3x+1)(4x-13) = (2x+5)(6x-2)$

$12x^2 - 39x - 13 = 12x^2 - 4x + 30x - 10$   
 $-35x - 13 =$

28)  $\frac{2}{5} + \frac{4}{10x+5} = \frac{7}{2x+1}$

LD:  $5(2x+1)$

## Sect 2.2: Applied Problems



### Ex. 1: Average

A student in an algebra course has test scores of 64 and 78. What score on a third test will give the student an average of 80?

$$\frac{64 + 78 + x}{3} = 80$$

$\therefore$  The Student would have to score a 98% in order to have an 80% for all 3 tests.

$$64 + 78 + x = 240$$

$$x = 98$$

$\therefore$

### Ex 2: Sales



A clothing store holding a clearance sale advertises that all prices have been discounted 20%. If a shirt is on sale for \$28, what was its presale price?

$$x - .2x = 28$$

$$\frac{.8x}{.8} = \frac{28}{.8}$$

$$x = 35$$


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**Ex 3: Investment**



An investment firm has \$100,000 to invest for a client and decides to invest it in two stocks, A and B. The expected annual rate of return, or simple interest, for stock A is 15%, but there is some risk involved, and the client does not wish to invest more than \$50,000 in this stock. The annual rate of return on the more stable stock B is anticipated to be 10%. Determine whether there is a way of investing the money so that the annual interest is \$12,000.

	Principal (P)	Rate (R)	Interest (I=PRT)
Stock A	X	.15	.15X
Stock B	100,000 - X	.1	<del>.1(100,000 - X)</del>

$12,000 = .15A + .1B$   
 $100,000 = A + B$   
 $100,000 = 40,000 + B$   
 $60,000 = B$

$12,000 = .15A + .1(100,000 - A)$   
 $= .15A + 10,000 - .1A$   
 $= .05A + 10,000$   
 $2,000 = .05A$   
 $40,000 = A$

$\therefore$  He needs to invest  
 \$40,000 in Stock A and  
 \$60,000 in Stock B.

$.15X + .1(100,000 - X) = 12,000$

**Ex 4: Mixture Problem**

A chemist has 10 milliliters of a solution that contains a 30% concentration of acid. How many milliliters of pure acid must be added in order to increase the concentration to 50%?



	Amount of Solution	%	Amount of Total Solution
Solution			
Pure Acid			
Mixture			

solution + pure acid = mix  
 $10\text{ml} + X = Y$   
 $.3(10) + 1X = .5Y$   
 $3 + X = .5(10 + X)$   
 $3 + X = 5 + .5X$   
 $X = 2 + .5X$   
 $.5X = 2$   
 $X = 4$

Ex 5: Distance



Two cities are connected by means of a highway. A car leaves city B at 1:00 pm and travels at a constant rate of 40 mi/hr toward city C. Thirty minutes later, another car leaves B and travels toward C at a constant rate of 55 mi/hr. If the lengths of the cars are disregarded, at what time will the second car reach the first car?

	Rate (r)	Time (t)	Distance (d=rt)
First Car	40	X	40X
Second Car	55	X-30	55(X-30)

Rate of first car: 40mph  
 travels for 1/2 hour → 20 miles  
 Second car: 55mph.. 15mph faster  
 1 mile 4 minutes 80

$$40x = 55(x-30)$$

$$x = 110$$

$$\begin{array}{r} 110 \\ - 60 \\ \hline 50 \end{array}$$

Ex 6: Geometric Problem

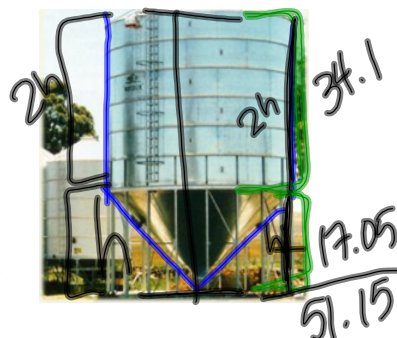
A grain-elevator hopper is to be constructed as shown with a right circular cylinder of radius 2 ft and altitude  $h$  feet on top of a right circular cone whose altitude is one-half that of the cylinder. How tall is the whole hopper if the volume is 500 cubic feet?

$$500 = \text{cone} + \text{cylinder}$$

$$500 = \frac{1}{3}\pi r^2 h + \pi r^2 h$$

$$500 = \frac{1}{3}\pi(2)^2 h + \pi(2)^2(2h)$$

$$500 = \frac{\pi(4)h}{3} + \pi(4)(2h)$$



$$1500 = 4\pi h + 24\pi h$$

$$\frac{1500}{28\pi} = \frac{28\pi h}{28\pi}$$

$$17.05 = h$$

$$1500 \div (28\pi)$$