

Mixture Problems

1.	Seed mixture X is 40 percent ryegrass and 60 percent bluegrass by weight; seed mixture Y is 25 percent ryegrass and 75 percent fescue. If a mixture of X and Y contains 30 percent ryegrass, what percent of the weight of this mixture is X? (A) 10% (B) 33.33 % (C) 40% (D) 50% (E) 66.66 %
	Let $M = x + y$ M = New mixture x = Mixture X y = Mixture Y What do we need to find ?? $\Rightarrow (x/M)*100$ Equating Ryegrass in the mixture - $.4x + 0.25y = 0.3M$ $.4x + 0.25(M-x) = 0.3M$ $.4x + 0.25M - 0.25x = 0.3M$ $.15x = .05M$ $x/M = 1/3$ http://gmatclub.com/forum/seed-mixture-x-is-ryegrass-and-bluegrass-82617.html
2.	A certain shade of gray paint is obtained by mixing 3 parts of white paint with 5 parts of black paint. If 2 gallons of the mixture is needed and the individual colors can be purchased only in one-gallon or half- gallon cans, what is the least amount of paint, in gallons, that must be purchased in order to measure out the portions needed for the mixture? (A) 2 (B) 2.5 (C) 3 (D) 3.5 (E) 4
	$W = 2*3/8 = 3/4 = 0.75$

	$B = 2 \times \frac{5}{8} = \frac{5}{4} = 1.25$ I have opportunity to buy 1 litter cane and $\frac{1}{2}$ litter cane So, 1 white cane and 1.5 litters black cane total 2.5 Ans. B http://gmatclub.com/forum/a-certain-shade-of-gray-paint-is-obtained-by-mixing-3-parts-42115.html#p1012379
3.	How much water (in grams) should be added to the 35%-solution of acid to obtain the 10%-solution? 1. There are 50 grams of the 35%-solution 2. In the 35%-solution the ratio of acid to water is 7:13
	1. Water in 50 grams = $50 \times 75\% = 37.5$ grams so $(37.5/35\%) \times 10\%$ Statement 1 is sufficient 2. it gives ratio. Insufficient Ans. A http://gmatclub.com/forum/how-much-water-in-grams-should-be-added-to-the-82575.html#p1012380
4.	Are at least 10 percent of the people in Country X who are 65 years old or older employed? 1. In Country X, 11.3% of the population is 65 years old or older 2. In Country X, of the population 65 years old or older, 20 percent of the men and 10 percent of the women are employed.
	Stat 1: doesnt help by itself as it does not give information about employment. Stat 2: says that at least 10% of man and woman above 65 years of age are employed, which is sufficient to answer the questions being asked. Assuming that Country X has only man and woman. Ans. B http://gmatclub.com/forum/at-least-10-percent-of-the-people-in-country-x-who-are-

	122734.html
5.	X grams of water were added to the 80 grams of a strong solution of acid. As a result, the concentration of acid in the solution dropped by Y percent. What was the concentration of acid in the original solution? 1. X = 80 2. Y = 50
	St1: 80 gms of water is added to 80 gms of acid solution. So if original acid solution contained say m% acid concentration, then on adding 80 gms of water the concentration will become $m/2\%$. But we still do not know the value of m. => NOT SUFFICIENT St2: This statement states the data of statement 1 in a different way, in the sense it states that the new concentration is $1/2$ of the original concentration which means that 80 gms of water has been added. => NOT SUFFICIENT St1 & St2 Together: Since both the statements give the same piece of information, they are not sufficient even when used together. => NOT SUFFICIENT ANS: E http://gmatclub.com/forum/x-grams-of-water-were-added-to-the-80-grams-of-a-strong-82316.html
6.	If 200 lb of a mixture contain 80% husk and 20% sand. Then how much husk needs to be extracted in order to have 75% concentration of Husk? a) $1/4$ b) $20/3$ c) $1/2$ d) 40 e) 60
	Ans. D
7.	A rabbit on a controlled diet is fed daily 300 grams of a mixture of two foods, food X and food Y. Food X contains 10% protein and food Y contains 15% protein. If the rabbit's diet provides exactly 38 grams of protein daily, how many grams of food X are in the mixture.

	a)100 b)140 c)150 d)160 e)200
	Ans. B
8.	Solution Y is 30 percent liquid X and 70 percent water. If 2 kilograms of water evaporate from 8 kilograms of solution Y and 2 kilograms of solution Y are added to the remaining 6 kilograms of liquid, what percent of this new solution is liquid X? (A) 30% (B) $33\frac{1}{3}\%$ (C) $37\frac{1}{2}\%$ (D) 40% (E) 50%
	Liquid x in 8 kg = $8 \cdot 30\% = \frac{12}{5}$ Liquid x in next 2 kg = $2 \cdot 30\% = \frac{3}{5}$ Total x = $\frac{12}{5} + \frac{3}{5} = \frac{15}{5} = 3$ so, $(\frac{3}{8}) \cdot 100 = 37.5\%$ Ans. C
9.	Each piglet in a litter is fed exactly one-half pound of a mixture of oats and barley. The ratio of the amount of barley to that of oats varies from piglet to piglet, but each piglet is fed some of both grains. how many piglets are there in the litter? 1) Piglet A was fed exactly $\frac{1}{4}$ of the oats today 2) Piglet A was fed exactly $\frac{1}{6}$ of the barley today
	http://gmatclub.com/forum/each-piglet-in-a-litter-is-fed-exactly-one-half-pound-of-a-82321.html
10.	Miguel is mixing up a salad dressing. Regardless of the number of servings, the recipe requires that $\frac{5}{8}$ of the finished dressing mix be olive oil, $\frac{1}{4}$ vinegar, and the remainder an even mixture of salt, pepper and sugar. If Miguel accidentally doubles the vinegar and forgets the sugar altogether, what proportion of the botched dressing will be olive oil? A) $\frac{15}{29}$ B) $\frac{5}{8}$ C) $\frac{5}{16}$ D) $\frac{1}{2}$ E) $\frac{13}{27}$
	Lets chose $24x$ is total $24x \cdot \frac{5}{8} = 15x$ olive oil $24x/4 = 6x$ vinegar the remainder is $3x$(x for sugar,x for salt,x for pepper)

	Double the vinegar is $12x$ and lack of sugar means we have $2x$(salt and pepper) In total $15x+12x+2x= 29x$ $15x/29x=15/29$ http://gmatclub.com/forum/miguel-is-mixing-up-a-salad-dressing-82347.html
11.	A certain type of concrete mixture is to be made of cement, sand and gravel in a ratio 1:3:5 by weight. What is the greatest number of kilograms of this mixture that can be made with 5 kilograms of cement? 1. $13 \frac{1}{2}$ 2. 15 3. 25 4. 40 5. 45
	total x $x \cdot \frac{1}{9} = 5$ $x = 45$ Ans. E http://gmatclub.com/forum/a-certain-type-of-concrete-mixture-82348.html#p1012599
12.	Some of 50%-intensity red paint is replaced with 25% solution of red paint such that the new paint intensity is 30%. What fraction of the original paint was replaced? A. $\frac{1}{30}$ B. $\frac{1}{5}$ C. $\frac{2}{3}$ D. $\frac{3}{4}$ E. $\frac{4}{5}$
	Let total paint = 1 Let amount replaced = x $50(1-x) + 25x = 30$ $x = \frac{4}{5}$ http://gmatclub.com/forum/some-of-50-intensity-red-paint-is-replaced-with-55740.html
13.	Material A costs \$3 per kilogram, and material B costs \$5 per kilogram. If 10 kilograms of material K consists of x kilograms of material A and y kilograms of material B, is $x > y$? (1) $y > 4$ (2) The cost of the 10 kilograms of material K is less than \$40.
	$3x + 5y$ $x + y = 10$ (1) $y > 4$ But $x = 5, y = 5$ is possible

	$y = 4.5$ $x = 5.5$ is possible (2) $3x + 5y < 40$ $3(10 - y) + 5y < 40$ $2y < 10$ $y < 5$ So $x > y$ - sufficient Answer – B
14.	How many liters of pure alcohol must be added to a 100-liter solution that is 20 percent alcohol in order to produce a solution that is 25 percent alcohol? (A) $7/2$ (B) 5 (C) $20/3$ (D) 8 (E) $39/4$
	20% Alcohol solution means; in the 100 liter solution, 20 liters of solution is alcohol and 80 liters other solvents. If we add "x" liters of alcohol to the solution, the solution becomes "100+x" liters and alcohol, which was 20 liters, becomes 20+x liters. According to the statement; $20+x = 25\% \text{ of } (100+x)$ OR $20+x = (100+x)/4$ $80+4x=100+x$ $3x=20$ $x=20/3$ Ans: "C" http://gmatclub.com/forum/ps-1000-section6-question-111746.html
15.	Two different solutions of alcohol with respective proportions of alcohol to water of 3:1 and 2:3 were combined. What is the concentration of alcohol in the new solution if the first solution was 4 times the amount of the second solution?
	New solution $(20+80) = 100$ Alcohol in first solution = $80 * 3/4 = 60$

	Alcohol in second solution = $20 \times \frac{2}{5} = 8$ Total Alcohol = 68 Concentration of Alcohol $\frac{68}{100} \times 100 = 68\%$ Ans.
16.	10kg of a mixture contains 30% sand and 70% clay. In order to make the mixture contain equal quantities of clay and sand. how much of the mixture is to be removed and replaced with pure sand?
	Initially, Sand = 30% of 10 = 3kg Clay = 70% of 10 = 7 kg Suppose x kg of the material is removed. in x kg 30% of x will be sand and 70% of x will be clay thus now quantity of Sand left = $3 - 0.3x$ and Clay = $7 - 0.7x$ since equal amount is replaced $\Rightarrow$ x kg of sand is now added As per the given condition after the replacement both sand and clay are equal in quantity, $\Rightarrow 3 - 0.3x + x = 7 - 0.7x$ $\Rightarrow x = \frac{20}{7}$
17.	Two mixtures A and B contain milk and water in the ratios 2:5 and 5:4 respectively. How many gallons of A must be mixed with 90 gallons of B so that the resultant mixture contains 40% milk?
	$50 + \frac{2}{7}x = .4(90 + x)$ $x = 122.5$
18.	One fourth of a solution that was 10 percent sugar by weight was replaced by a second solution resulting in a solution that was 16 percent sugar by weight. The second solution was what percent sugar by weight ? (A) 34% (B) 24% (C) 22% (D) 18% (E) 8.5%
	$3(16-10) = 1(X-16)$ $48-30=X-16$ $18+16=X$ $X = 34\%$ http://gmatclub.com/forum/one-fourth-of-a-solution-that-was-10-percent-sugar-by-weight-10946.html
19.	Three grades of milk are 1 percent, 2 percent and 3 percent fat by volume. If x gallon of 1 percent grade, y gallon of 2 percent grade, and z gallon of 3 percent grade are mixed to give x + y + z gallons of 1.5 percent grade, what is x in terms of y and z ? a. $y + 3z$ b. $(y+z) / 4$

	c. $2y + 3z$ d. $3y + z$ e. $3y + 4.5z$
	$0.01x + 0.20y + 0.03z = 0.015(x + y + z)$ $X = y + 3z$ Ans. A
20.	24 lbs of coffee P and 25 lbs of coffee V are mixed to make coffee X and Y. The ratio of P to V in coffee X is 4 to 1, in Y is 1 to 5. How much of P is contained in the mixture X?
	$P_x/V_x = 4/1$ $P_y/V_y = 1/5$ $P_x = 4V_x$ $5P_y = V_y$ $P_x + P_y = 24$ $V_x + V_y = 25$ $P_x + P_y = 24$ $P_x/4 + 5P_y = 25$ $-5P_x - 5P_y = -120$ $+P_x/4 + 5P_y = 25$ $(P_x - 20P_x)/4 = -95 \rightarrow -19P_x = -380$ $P_x = 20$ http://gmatclub.com/forum/24-lbs-of-coffee-p-and-25-lbs-of-coffee-v-are-mixed-to-make-57374.html?hilit=mixture
21.	A shade of paint is made by evenly mixing m gallons of white paint, costing \$12 a gallon, with n gallons of blue paint, costing \$30. What is the cost, in dollars per gallon, of the resulting mixture? a) $12m + 30n$ b) $42(12m + 30n)$ c) $(12m + 30n) / 42$ d) $(12m + 30n) / (M + N)$ e) $42(M + N) / (12m + 30n)$
	Ans. D
22.	Some part of the 50% solution of acid was replaced with the equal amount of 30% solution of acid. As a result, 40% solution of acid was obtained. what part of the original solution was replaced? a) $1/5$ b) $1/4$ c) $1/2$

	d) $\frac{3}{4}$ e) $\frac{4}{5}$
	Let X = Part of acid solution replaced, then 1-X will be the parts not replaced. $(1-X)*0.5 + 0.3*x = 0.4$ $0.5 - 0.5X + 0.3X = 0.4$ $-0.2X = -0.1$ $X = \frac{1}{2}$ So the answer is C http://gmatclub.com/forum/ps-mixture-problem-38736.html
23.	A portion of the 85% solution of chemicals was replaced with an equal amount of 20% solution of chemicals. As a result, 40% solution of chemicals resulted. What part of the original solution was replaced?
	x part is replaced so 1-x is not replaced $(1-x)0.85 + 0.20x = 0.40$ $0.85 - 0.85x + 0.20x = 0.40$ $0.65x = 0.45$ $x = \frac{9}{13}$ http://gmatclub.com/forum/a-portion-of-the-85-solution-of-chemicals-was-replaced-with-55090.html#p1014807
24.	A contractor combined "x" tons of a gravel mixture that contained 10% gravel G, by weight, with "y" tons of a mixture that contained 2% gravel G, by weight, to produce "z" tons of a mixture that was 5% gravel G, by weight. What is the value of "x" 1) y = 10 2) z = 16
	A contractor combined "x" tons of a gravel mixture that contained 10% gravel G, by weight, with "y" tons of a mixture that contained 2% gravel G, by weight, to produce "z" tons of a mixture that was 5% gravel G, by weight. What is the value of "x" 1) y = 10 2) z = 16 For the 1st one set up equation like this: x tons of gravel mixture contains 10% G = 0.1x G by weight. y tons of gravel mixture contains 2% G = 0.02y G by weight. z tons of gravel mixture contains 5% G = 0.05z G by weight. Also z = x + y Hence 0.1x + 0.02y = 0.05z 0.1x + 0.02y = 0.05(x + y) ----- (1) Stmt1: y = 10 Substituting in 1 0.1x + 0.2 = 0.5x + 0.5 solve for x = 6

	Stmt2: $z=16$ i.e $x+y=16$----- (2) Solve (1) and (2) $x=6$ OA D. http://gmatclub.com/forum/a-contractor-combined-x-tons-of-a-gravel-mixture-that-114159.html
25.	In a certain senior class, 72 percent of the male students and 80 percent of the female students have applied to college. What fraction of the students in the senior class are male? 1) There are 840 students in the senior class 2) 75 percent of the students in the senior class have applied to college
	$m+f=T$ 1. is insufficient 2. $.72m+.80f=.75(T)$ suf. $.72M+.8(T-M)=0.75T$ SUF. B Ans. http://gmatclub.com/forum/in-a-certain-senior-class-72-percent-of-the-male-students-82497.html
26.	According to the directions on a can of frozen orange juice concentrate, 1 can of concentrate is to be mixed with 3 cans of water to make orange juice. How many 12-ounce cans of the concentrate are required to prepare 200 6-ounce servings of orange juice? a)25 b)34 c)50 d)67 e)100
	1 can concentrate yields 4 of juice 12 ounce can will yield 48 ounces of juice Total ounces of juice we need to make is $200 * 6 = 1200$ ounces therefore total cans required = $1200 / 48 = 25$ Answer is Option A http://gmatclub.com/forum/according-to-the-directions-on-a-can-of-frozen-orange-juice-46513.html
27.	A 30% alcohol mixture is added to a 50% alcohol mixture to form a 10 liter mixture of 45% alcohol. How much of the 30% mixture was used?
	x = amount of 30% solution $30x + 50(10-x) = 45*10$

	$x = 2.5$ http://gmatclub.com/forum/a-30-alcohol-mixture-is-added-to-a-50-alcohol-mixture-to-50630.html
28.	There are two bars of gold-silver alloy; one piece has 2 part of gold to 3 parts of silver, and the other has 3 parts of gold to 7 parts of silver. If both bars are melted into an 8 kg bar with final ration of 5:11 of gold to silver, what was the weight of the first bar? 1) 1 kg 2) 3 kg 3) 5 kg 4) 6 kg 5) 7 kg
	X is weight of first bar and (8-x) is weight of second bar. $(2/5)x + (3/10)(8-x) = (5/16)*8$ $\Rightarrow x = 1$
29.	Bob just filled his car's gas tank with 20 gallons of gasohol, a mixture consisting of 5% ethanol and 95% gasoline. If his car runs best on a mixture consisting of 10% ethanol and 90% gasoline, how many gallons of ethanol must he add into the gas tank for his car to achieve optimum performance? a) 9/10 b) 1 c) 10/9 d) 20/19 e) 2
	Let x liter ethanol has to be mixed $1+x = 0.10(20+x)$ $1+x = 2+0.10x$ $0.90x = 1$ $x = 10/9$ Ans. C http://gmatclub.com/forum/bob-just-filled-his-car-s-gas-tank-with-20-gallons-of-45790.html#p1014908
30.	A mixture of nuts is to contain 3 parts cashews to 6 parts almonds to 7 parts walnuts by weight. How many pounds of almonds will be needed to make 5 pounds of the mixture? a.) 3/8 b.) 8/15 c.) 6/5 d.) 5/3 e.) 15/8
	The ratios = 3:6:7 Almond in 1 pound $1*6/16 = 6/16$ Almond in 5 pound = $[6/16]*5 = 15/8$ Ans. E http://gmatclub.com/forum/ps-melted-gold-silver-48285.html

abdt_80@yahoo.com