

## Weighted Mean Practice Problems

Key

1. On a course outline, the teacher has indicated that the course work is worth 70% of the final mark and the exam is worth 30% of the final mark.

Calculate the final mark of a student who has achieved 67% on the course work and 82% on the final exam.

$$\begin{array}{r} 67 \times 0.70 \quad 46.9 \\ + 82 \times 0.30 \quad 24.6 \\ \hline \underline{\underline{71.5\%}} \end{array}$$

2. In gymnastic competitions, a maximum of 10 points can be awarded per category.

The table below shows Alice's results.

Category	Weight	Points
Execution	80%	9.8
Difficulty	20%	8.3
Overall Score		

Calculate Alice's overall score using a weighted mean.

$$\begin{array}{r} 9.8 \times 0.8 \\ + 8.3 \times 0.2 \\ \hline \underline{\underline{9.5}} \end{array}$$

## Weighted Mean Practice Problems

3. Three farms in Manitoba auctioned off their cattle. The table below shows the number of cows and the price per cow for each farm.

Farm	Number of Cows	Price per Cow
Newdale	300	\$1400
Parkview	500	\$1100
Hidden Valley	1000	\$950

Calculate the average price per cow using a weighted mean.

$$\frac{(300 \times \$1400 + 500 \times \$1100 + 1000 \times \$950)}{1800} = \frac{1920000}{1800} = \underline{\underline{\$1066.67 / \text{cow}}}$$

4. A golf course located near a shopping center may be expanded. A survey is conducted at two locations to determine the percentage of people in favour of the expansion. The table below shows the results of the survey.

Survey Location	Percentage in Favour	Weight
Golf Course	95%	20%
Shopping Centre	35%	80%

*100% of population*

Calculate the weighted mean of the percentage in favour of the expansion of the golf course.

$$95 \times 0.20 + 35 \times 0.80 = \underline{\underline{47\%}}$$

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## Weighted Mean Practice Problems

5. Réjean entered one of his paintings in the provincial art show. The table below shows the points he received and the weight of each category.

Category	Points Received (out of 100)	Weight	
Originality	92	35%	32.2
Design	87	40%	34.8
Colour	77	25%	19.25

Calculate the final score on Réjean's painting using a weighted mean.

$$\underline{\underline{86.25\%}}$$

6. Athena is trying to calculate her final mark on her test. The table below shows the percent she received and the weightings for each category.

Category	% correct	Weight	
Multiple choice	87% 87	$\times \frac{0.5}{50\%}$	= 43.5
Short answer	61% 61	$\times \frac{0.2}{20\%}$	= 12.2
Long answer	68% 68	$\times \frac{0.3}{30\%}$	= 20.4

Calculate Athena's final mark using a weighted mean.

$$\underline{\underline{76.1\%}}$$

## Weighted Mean Practice Problems

7. Juanita took a Physics course. The following table shows the marks she earned for a project and the weight for each category:

Category	Mark (%)	Weight (%)
Theories	90 $\times$	.40
Communication	60 $\times$	.10
Calculations	70 $\times$	.50

36

6

35

- a) Calculate Juanita's final mark for the project using a weighted mean.

77%

- b) If Juanita wanted to improve her overall grade, state in which category she should focus her efforts. Justify your answer.

Calculations!  
most weight is on  
this category.  
Theories would be  
second highest  
weight.

## Weighted Mean Practice Problems

8. Nicole is calculating her final mark in an Essential Mathematics course. Her projects are worth 45%, her tests are worth 35%, and her final exam is worth 20%.

Nicole earned

40% on her projects	$40 \times 0.45 = 18$
60% on her tests	$60 \times 0.35 = 21$
75% on her final exam	$75 \times 0.20 = 15$

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Calculate her final mark using a weighted mean.

54%

9. Megan is taking a Psychology class at university. The table below shows her marks and their corresponding weights.

Category	Average Mark (%)	Weight (%)
Projects	75	$\times .10$
Assignments	85	$\times .30$
Tests	73	$\times .40$
Exam	?	20

7.5  
 25.5  
 29.2

Calculate the mark Megan needs on her final exam to receive a final mark of 80%.

$62.2$  so far. Needs  $80$ .  
 $80 - 62.2 = 17.8$  more points needed.  
 total points left are the 20 exam points.  
 $\frac{17.8}{20}$  needed which is 89% on exam.

## Weighted Mean Practice Problems

10. Tatiana is enrolled in a law class. The following table shows the average marks she earned and the weight for each category.

Category	Average Mark	Weight
Assignments	90	10%
Tests	65	60%
Final Exam	60	30%

Using a weighted mean, calculate Tatiana's final mark in the course.

$$90 \times 0.10 + 65 \times 0.60 + 60 \times 0.30$$

$$\underline{\underline{66}}$$

11. A train has 60 cars. Calculate the average load of one train car using a weighted mean, based on the information in the table below.

Type of Car	Number of Cars on Train	Load Per Car (Tons)
Cargo	50	100
Grain	10	80

$$\frac{50 \times 100 + 10 \times 80}{60}$$

$$\frac{5800}{60} = \underline{\underline{96.67 \text{ tons/car}}}$$