THIRD SPACE LEARNING

Mean from a Frequency Table Worksheet

Statistics and Probability

Grades 6 to 8

Skill Questions

Name: .....

Date: .....

1 The frequency table shows the total number of pets of students in a class. Find the mean number of pets.

Number of pets	Frequency
0	5
1	11
2	7
3	3

Answer

2 The frequency table shows the number of goals scored in 20 soccer games. Find the mean number of goals.

Goals	Frequency
0	6
1	12
2	1
4	1

Answer

3 The frequency table shows the total slices of pizza eaten by each student at a class party. Find the mean slices of pizza.

Slices of pizza	Frequency
1	15
2	19
3	24
4	4

Answer

4 The frequency table shows a sample of the total number of apples in a 10 pound bag at the grocery store. Find the mean number of apples.

Number of apples	Frequency
11	3
12	11
13	24
14	40
15	15

Answer

5 The frequency table shows a sample of the total number of items customers bought at a dollar store. Find the mean number of items.

Number of items	Frequency
1	2
2	5
3	6
4	2
5	8

Answer

6 The frequency table shows the number of questions each student got correct. *Estimate* the mean number of correct questions.

Total number of questions correct	Frequency
$0 < x \leq 10$	5
$10 < x \leq 20$	7
$20 < x \leq 30$	4
$30 < x \leq 40$	9

Answer

7 The frequency table shows the weight of 20 tomatoes. *Estimate* the mean number of correct questions.

Weight of tomato (grams)	Frequency
$140 < x \leq 150$	4
$150 < x \leq 160$	14
$160 < x \leq 170$	2

Answer

8 The frequency table shows the average speed of a sample of marathon runners. *Estimate* the mean speed of the runners to the nearest tenth.

Speed of runner (mph)	Frequency
$4.35 < x \leq 4.65$	4
$4.65 < x \leq 4.95$	8
$5.25 < x \leq 5.55$	3
$5.55 < x \leq 5.85$	7

Answer

9 The frequency table shows the cost per pound for a sample of raw chicken. *Estimate* the mean cost per pound.

Cost per pound	Frequency
$1.35 < x \leq 1.45$	6
$1.45 < x \leq 1.55$	7
$1.55 < x \leq 1.65$	9
$1.65 < x \leq 1.75$	4

Answer

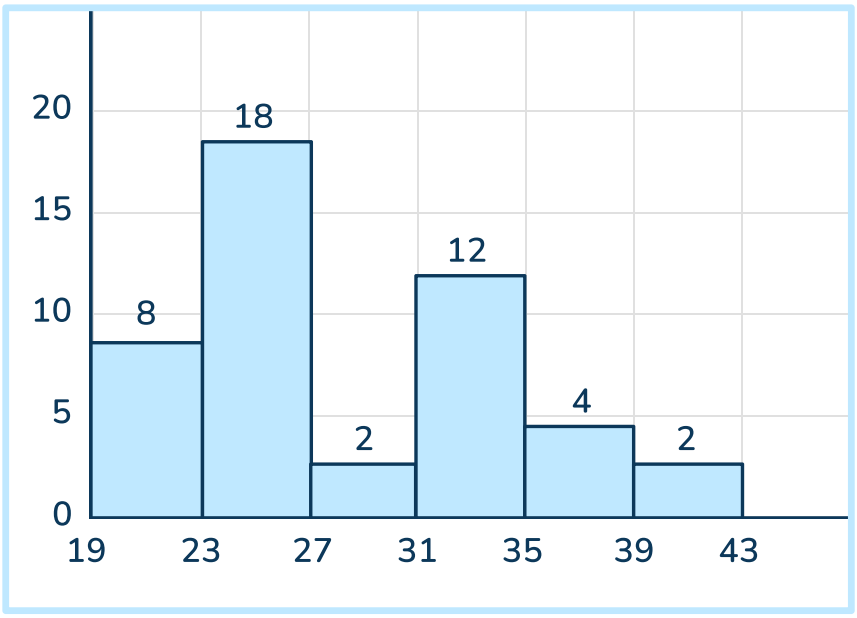
10 The frequency table shows the cups of water needed in a random sample of recipes. Estimate the mean cups of water.

Cups of water	Frequency
$0 < x \leq \frac{1}{3}$	5
$\frac{1}{3} < x \leq \frac{2}{3}$	1
$\frac{2}{3} < x \leq 1$	1
$1 < x \leq 1\frac{1}{3}$	3
$1\frac{1}{3} < x \leq 1\frac{2}{3}$	8
$1\frac{2}{3} < x \leq 2$	2

Answer

Applied Questions

11 Estimate the mean data point.



Answer

12 Talia *estimated* the mean of the frequency table below as 45.2 questions correct.

Total number of questions correct	Frequency
$0 < x \leq 20$	5
$20 < x \leq 40$	6
$40 < x \leq 60$	4
$60 < x \leq 80$	10

a. Explain why Talia estimated the mean.

Answer

b. Explain how the actual data set could have a higher mean.

Answer

13 The table shows the grouped data about the height of 200 trees in a forest. The *estimated* mean is 16.16 meters.

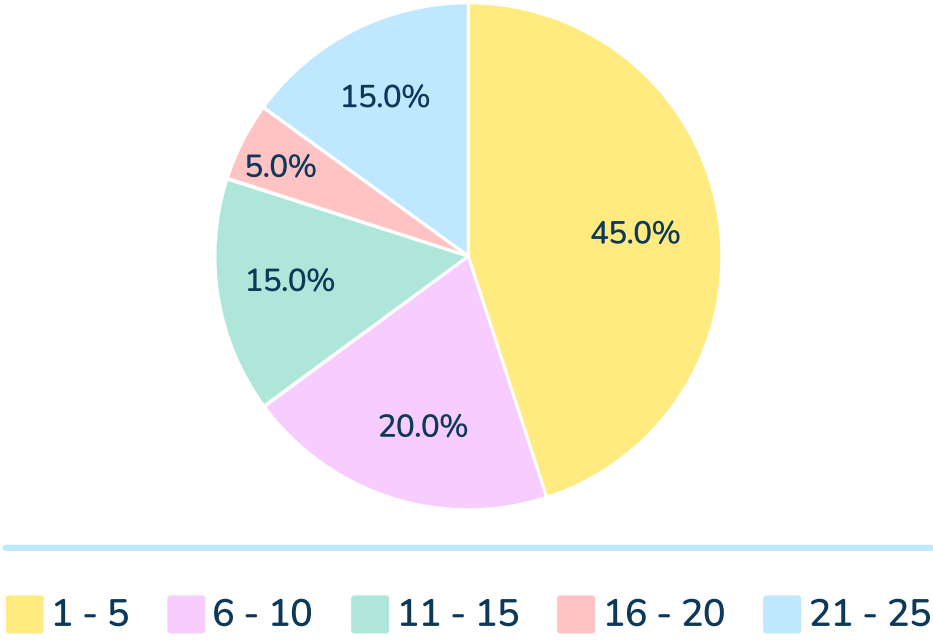
Height (h meters)	Frequency
$0 < h \leq 5$	22
$5 < h \leq 10$	12
$10 < h \leq 15$	46
$15 < h \leq 20$	48
$20 < h \leq 25$	62
$25 < h \leq 30$	10

If the data was regrouped into new classes (by the colors shown), what would the new estimated mean be? Then compare the two estimated means.

_____

_____

14 The pie chart shows groups of ages that play an online game. Estimate the mean age.



Answer

15 The *estimated* average mean is 40. Fill in the table showing a possible data set.

Groups	Frequency	Frequency × Midpoint
$0 < x \leq 20$	_____	10 × _____ = _____
$20 < x \leq 40$	_____	30 × _____ = _____
$40 < x \leq 60$	_____	50 × _____ = _____
Total	25	_____

_____ ÷ 25 = 40

Answer

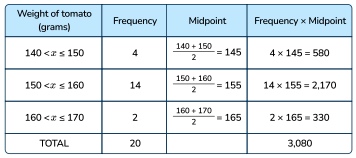
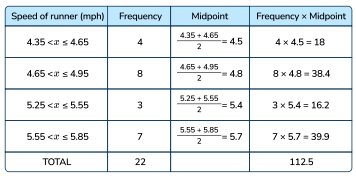
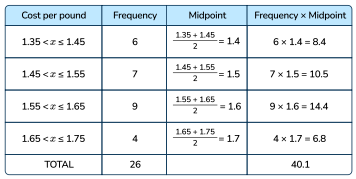
Answers

Question number	Question	Answers	Standard
1	The frequency table shows the total number of pets of students in a class. Find the mean number of pets Number of pets: 0, 1, 2, 3 Frequency: 5, 11, 7, 3	Number of pets: 0, 1, 2, 3, TOTAL Frequency: 5, 11, 7, 3, 26 Number × Frequency: 0 × 5 = 0, 1 × 11 = 11, 2 × 7 = 14, 3 × 3 = 9, 34 34 ÷ 26 = 1.3 pets	6.SP.B.4
2	The frequency table shows the number of goals scored in 20 soccer games. Find the mean number of goals. Goals: 0, 1, 2, 4 Frequency: 6, 12, 1, 1	Goals: 0, 1, 2, 4, TOTAL Frequency: 6, 12, 1, 1, 20 Number × Frequency: 0 × 6 = 0, 1 × 12 = 12, 2 × 1 = 2, 4 × 1 = 4, 18 18 ÷ 20 = 0.9 goal	6.SP.B.4
3	The frequency table shows the total slices of pizza eaten by each student at a class party. Find the mean sces of pizza. Slices of pizza: 1, 2, 3, 4 Frequency: 15, 19, 24, 4	Slices of pizza: 1, 2, 3, 4, TOTAL Frequency: 15, 19, 24, 4, 62 Number × Frequency: 1 × 15 = 15, 2 × 19 = 38, 3 × 24 = 72, 4 × 4 = 16, 141 141 ÷ 62 = 2.3 slices	6.SP.B.4

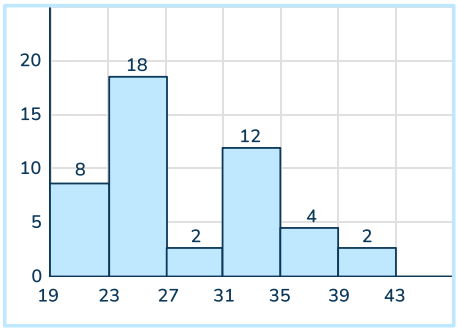
Mean from a Frequency Table Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
4	The frequency table shows a sample of the total number of apples in a 10 pound bag at the grocery store. Find the mean number of apples. Number of apples: 11, 12, 13, 14, 15 Frequency: 3, 11, 24, 40, 15	Number of apples: 11, 12, 13, 14, 15, TOTAL Frequency: 3, 11, 24, 40, 15, 93 Number × Frequency: 11 × 3 = 33; 12 × 11 = 132; 13 × 24 = 312; 14 × 40 = 560; 15 × 15 = 225; 1,262 1,262 ÷ 93 = 13.57 apples	6.SP.B.4
5	The frequency table shows a sample of the total number of items customers bought at a dollar store. Find the mean number of items. Number of items: 1, 2, 3, 4, 5 Frequency: 2, 5, 6, 2, 8	Number of items: 1, 2, 3, 4, 5, TOTAL Frequency: 2, 5, 6, 2, 8, 23 Number × Frequency: 1 × 2 = 2; 2 × 5 = 10; 3 × 6 = 18; 4 × 2 = 8; 5 × 8 = 40; 78 78 ÷ 23 = 3.4 items	6.SP.B.4
6	The frequency table shows the number of questions each student got correct. *Estimate* the mean number of correct questions. Total number of questions correct: $0 < x \leq 10$; $10 < x \leq 20$; $20 < x \leq 30$; $30 < x \leq 40$ Frequency: 5, 7, 4, 9	Total number of questions correct: $0 < x \leq 10$; $10 < x \leq 20$; $20 < x \leq 30$; $30 < x \leq 40$; TOTALS Frequency: 5, 7, 4, 9, 25 Midpoint: $\frac{0+10}{2} = 5$; $\frac{10+20}{2} = 15$; $\frac{20+30}{2} = 25$; $\frac{30+40}{2} = 35$; Frequency × Midpoint: 5 × 5 = 25; 7 × 15 = 105; 4 × 25 = 100; 9 × 35 = 315; 545 545 ÷ 25 = 21.8 questions	6.SP.B.4

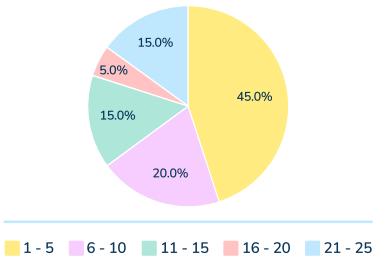
Mean from a Frequency Table Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
7	The frequency table shows the weight of 20 tomatoes. *Estimate* the mean number of correct questions. Weight of tomato (grams): $140 < x \leq 150$ — Frequency: 4 $150 < x \leq 160$ — 14 $160 < x \leq 170$ — 2	 Weight of tomato (grams) / Frequency / Midpoint / Frequency × Midpoint $140 < x \leq 150$ / 4 / $\frac{140+150}{2} = 145$ / $4 \times 145 = 580$ $150 < x \leq 160$ / 14 / $\frac{150+160}{2} = 155$ / $14 \times 155 = 2{,}170$ $160 < x \leq 170$ / 2 / $\frac{160+170}{2} = 165$ / $2 \times 165 = 330$ TOTAL / 20 / / 3,080 3,080 ÷ 20 = 154 grams	6.SP.B.4
8	The frequency table shows the average speed of a sample of marathon runners. *Estimate* the mean speed of the runners to the nearest tenth. Speed of runner (mph): $4.35 < x \leq 4.65$ — Frequency: 4 $4.65 < x \leq 4.95$ — 8 $5.25 < x \leq 5.55$ — 3 $5.55 < x \leq 5.85$ — 7	 Speed of runner (mph) / Frequency / Midpoint / Frequency × Midpoint $4.35 < x \leq 4.65$ / 4 / $\frac{4.35+4.65}{2} = 4.5$ / $4 \times 4.5 = 18$ $4.65 < x \leq 4.95$ / 8 / $\frac{4.65+4.95}{2} = 4.8$ / $8 \times 4.8 = 38.4$ $5.25 < x \leq 5.55$ / 3 / $\frac{5.25+5.55}{2} = 5.4$ / $3 \times 5.4 = 16.2$ $5.55 < x \leq 5.85$ / 7 / $\frac{5.55+5.85}{2} = 5.7$ / $7 \times 5.7 = 39.9$ TOTAL / 22 / / 112.5 112.5 ÷ 22 = 5.1 mph	6.SP.B.4
9	The frequency table shows the cost per pound for a sample of raw chicken. *Estimate* the mean cost per pound. Cost per pound: $1.35 < x \leq 1.45$ — Frequency: 6 $1.45 < x \leq 1.55$ — 7 $1.55 < x \leq 1.65$ — 9 $1.65 < x \leq 1.75$ — 4	 Cost per pound / Frequency / Midpoint / Frequency × Midpoint $1.35 < x \leq 1.45$ / 6 / $\frac{1.35+1.45}{2} = 1.4$ / $6 \times 1.4 = 8.4$ $1.45 < x \leq 1.55$ / 7 / $\frac{1.45+1.55}{2} = 1.5$ / $7 \times 1.5 = 10.5$ $1.55 < x \leq 1.65$ / 9 / $\frac{1.55+1.65}{2} = 1.6$ / $9 \times 1.6 = 14.4$ $1.65 < x \leq 1.75$ / 4 / $\frac{1.65+1.75}{2} = 1.7$ / $4 \times 1.7 = 6.8$ TOTAL / 26 / / 40.1 40.1 ÷ 26 = \$1.54 *rounded	6.SP.B.4

Mean from a Frequency Table Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
10	The frequency table shows the cups of water needed in a random sample of recipes. *Estimate* the mean cups of water. Cups of water: $0 < x \leq \frac{1}{3}$ — Frequency: 5 $\frac{1}{3} < x \leq \frac{2}{3}$ — 1 $\frac{2}{3} < x \leq 1$ — 1 $1 < x \leq 1\frac{1}{3}$ — 3 $1\frac{1}{3} < x \leq 1\frac{2}{3}$ — 8 $1\frac{2}{3} < x \leq 2$ — 2	Cups of water: $0 < x \leq \frac{1}{3}$ — Frequency: 5 — Midpoint: $\frac{0+\frac{1}{3}}{2} = \frac{1}{6}$ — Frequency × Midpoint: $5 \times \frac{1}{6} = \frac{5}{6}$ $\frac{1}{3} < x \leq \frac{2}{3}$ — 1 — $\frac{\frac{1}{3}+\frac{2}{3}}{2} = \frac{1}{2}$ — $1 \times \frac{1}{2} = \frac{1}{2}$ $\frac{2}{3} < x \leq 1$ — 1 — $\frac{\frac{2}{3}+1}{2} = \frac{5}{6}$ — $1 \times \frac{5}{6} = \frac{5}{6}$ $1 < x \leq 1\frac{1}{3}$ — 3 — $\frac{1+1\frac{1}{3}}{2} = 1\frac{1}{6}$ — $3 \times 1\frac{1}{6} = 3\frac{1}{2}$ $1\frac{1}{3} < x \leq 1\frac{2}{3}$ — 8 — $\frac{1\frac{1}{3}+1\frac{2}{3}}{2} = 1\frac{1}{2}$ — $8 \times 1\frac{1}{2} = 12$ $1\frac{2}{3} < x \leq 2$ — 2 — $\frac{1\frac{2}{3}+2}{2} = 1\frac{5}{6}$ — $2 \times 1\frac{5}{6} = 3\frac{2}{3}$ TOTAL — 20 — — $21\frac{1}{3}$ $21\frac{1}{3} \div 20 = 1\frac{1}{15}$ cups	6.SP.B.4
11	*Estimate* the mean data point.  	Groups: $19 < x \leq 23$ — Frequency: 8 — Midpoint: $\frac{19+23}{2} = 21$ — Frequency × Midpoint: $8 \times 21 = 168$ $23 < x \leq 27$ — 18 — $\frac{23+27}{2} = 25$ — $18 \times 25 = 450$ $27 < x \leq 31$ — 2 — $\frac{27+31}{2} = 29$ — $2 \times 29 = 58$ $31 < x \leq 35$ — 12 — $\frac{31+35}{2} = 33$ — $12 \times 33 = 396$ $35 < x \leq 39$ — 4 — $\frac{35+39}{2} = 37$ — $4 \times 37 = 148$ $39 < x \leq 43$ — 2 — $\frac{39+43}{2} = 41$ — $2 \times 41 = 82$ TOTAL — 46 — — 1,302 $1{,}302 \div 46 = 28$ *rounded	6.SP.B.4
12	Talia *estimated* the mean of the frequency table below as 45.2 questions correct. Total number of questions correct: $0 < x \leq 20$ — Frequency: 5 $20 < x \leq 40$ — 6 $40 < x \leq 60$ — 4 $60 < x \leq 80$ — 10	*Explanations will vary.* Example answer: a) Since the exact data points, on their ranges, are not known, Talia can only estimate. b) If the actual data set has more questions correct towards the top of each class (instead of in the middle, as estimated) then the mean will be higher than the estimate.	6.SP.B.4

Mean from a Frequency Table Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
13	The table shows the grouped data about the height of 200 trees in a forest. The *estimated* mean is 16.16 meters. If the data was regrouped into new classes (by the colors shown), what would the new *estimated* mean be? Then compare the two *estimated* means.	16.9 meters *Explanations will vary.* Example answer: The new estimated mean is slightly larger than the previous. This is because the classes were regrouped, because the total number, 200, didn't change. One reason it is larger is because before the largest class, $20 < h \leq 25$, was multiplied by 25 this time and not 22.5.	6.SP.B.4
14	The pie chart shows groups of ages that play an online game. *Estimate* the mean age.  	9.25 years old	6.SP.B.4
15	The *estimated* average mean is 40. Fill in the table showing a possible data set. _____ ÷ 25 = 40	*Answers will vary, but the total of 'frequency x midpoint' should be 1,000.* Example answer: 1,000 ÷ 25 = 40	6.SP.B.4

Height (h meters)	Frequency
$0 < h \leq 5$	22
$5 < h \leq 10$	12
$10 < h \leq 15$	46
$15 < h \leq 20$	48
$20 < h \leq 25$	62
$25 < h \leq 30$	10

Groups	Frequency	Midpoint	Frequency × Midpoint
1 - 5	45%	$\frac{1+5}{2} = 3$	0.45 × 3 = 1.35
6 - 10	20%	$\frac{6+10}{2} = 8$	0.2 × 8 = 1.6
11 - 15	15%	$\frac{11+15}{2} = 13$	0.15 × 13 = 1.95
16 -20	5%	$\frac{16+20}{2} = 18$	0.05 × 18 = 0.9
21 - 25	15%	$\frac{21+25}{2} = 23$	0.15 × 23 = 3.45
TOTAL	100%		9.25

Groups	Frequency	Frequency × Midpoint
$0 < x \leq 20$	_____	10 × _____ = _____
$20 < x \leq 40$	_____	30 × _____ = _____
$40 < x \leq 60$	_____	50 × _____ = _____
Total	25	_____

Groups	Frequency	Frequency × Midpoint
$0 < x \leq 20$	20	10 × 20 = 200
$20 < x \leq 40$	10	30 × 10 = 300
$40 < x \leq 60$	10	50 × 10 = 500
Total	25	1,000

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