

Question ID cf74060f

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: cf74060f

How many yards are equivalent to **612** inches? (**1 yard = 36 inches**)

- A. **0.059**
- B. **17**
- C. **576**
- D. **22,032**

ID: cf74060f Answer

Correct Answer: B

Rationale

Choice B is correct. It’s given that 1 yard = 36 inches. Therefore, 612 inches is equivalent to 612 inches $\frac{1 \text{ yard}}{36 \text{ inches}}$, which can be rewritten as $\frac{612 \text{ yards}}{36}$, or 17 yards.

Choice A is incorrect. This is the number of yards that are equivalent to 2.124 inches.

Choice C is incorrect. This is the number of yards that are equivalent to 20,736 inches.

Choice D is incorrect. This is the number of yards that are equivalent to 793,152 inches.

Question Difficulty: Easy

Question ID 6ef051d6

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 6ef051d6

A cherry pitting machine pits **12** pounds of cherries in **3** minutes. At this rate, how many minutes does it take the machine to pit **96** pounds of cherries?

- A. **8**
- B. **15**
- C. **24**
- D. **36**

ID: 6ef051d6 Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that the cherry pitting machine pits 12 pounds of cherries in 3 minutes. This rate can be written as $\frac{12 \text{ pounds of cherries}}{3 \text{ minutes}}$. If the number of minutes it takes the machine to pit 96 pounds of cherries is represented by x , the value of x can be calculated by solving the equation $\frac{12 \text{ pounds of cherries}}{3 \text{ minutes}} = \frac{96 \text{ pounds of cherries}}{x \text{ minutes}}$, which can be rewritten as $\frac{12}{3} = \frac{96}{x}$, or $4 = \frac{96}{x}$. Multiplying each side of this equation by x yields $4x = 96$. Dividing each side of this equation by 4 yields $x = 24$. Therefore, it takes the machine 24 minutes to pit 96 pounds of cherries.

Choice A is incorrect. This is the number of minutes it takes the machine to pit 32, not 96, pounds of cherries.

Choice B is incorrect. This is the number of minutes it takes the machine to pit 60, not 96, pounds of cherries.

Choice D is incorrect. This is the number of minutes it takes the machine to pit 144, not 96, pounds of cherries.

Question Difficulty: Easy

Question ID 767d5ce1

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 767d5ce1

A certain bird species can fly at an average speed of **16** meters per second when in continuous flight. At this rate, how many meters would this bird species fly in **4** seconds?

- A. **64**
- B. **20**
- C. **16**
- D. **12**

ID: 767d5ce1 Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that a certain bird species can fly at an average speed of 16 meters per second when in continuous flight. At this rate, in 4 seconds this bird species would fly $\frac{16 \text{ meters}}{\text{second}} \times 4 \text{ seconds}$, or 64 meters.

Choice B is incorrect. This is the value of $16 + 4$, not 164.

Choice C is incorrect. This is the distance the bird would fly in 1 second, not 4 seconds.

Choice D is incorrect. This is the value of $16 - 4$, not 164.

Question Difficulty: Easy

Question ID 8c80a1f7

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 8c80a1f7

A wind turbine completes **900** revolutions in **50** minutes. At this rate, how many revolutions per minute does this turbine complete?

- A. **18**
- B. **850**
- C. **950**
- D. **1,400**

ID: 8c80a1f7 Answer

Correct Answer: A

Rationale

Choice A is correct. Dividing the number of revolutions by the number of minutes gives the number of revolutions the turbine completes per minute. It's given that the wind turbine completes 900 revolutions in 50 minutes. Therefore, at this rate, this turbine completes $\frac{900}{50}$, or 18, revolutions per minute.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 33ac56b9

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 33ac56b9

A fish swam a distance of **5,104** yards. How far did the fish swim, in miles? (**1 mile = 1,760 yards**)

- A. **0.3**
- B. **2.9**
- C. **3,344**
- D. **6,864**

ID: 33ac56b9 Answer

Correct Answer: B

Rationale

Choice B is correct. It’s given that the fish swam 5,104 yards and that 1 mile is equal to 1,760 yards. Therefore, the fish swam 5,104 yards $\frac{1 \text{ mile}}{1,760 \text{ yards}}$, which is equivalent to $\frac{5,104}{1,760}$ miles, or 2.9 miles.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 90ff6271

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 90ff6271

Tilly earns p dollars for every w hours of work. Which expression represents the amount of money, in dollars, Tilly earns for $39w$ hours of work?

- A. $39p$
- B. $\frac{p}{39}$
- C. $p + 39$
- D. $p - 39$

ID: 90ff6271 Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that Tilly earns p dollars for every w hours of work. This can be represented by the proportion $\frac{p}{w}$. The amount of money, x , Tilly earns for $39w$ hours of work can be found by setting up the proportion $\frac{p}{w} = \frac{x}{39w}$. This can be rewritten as $39pw = xw$. Dividing both sides by w results in $x = 39p$.

Choice B is incorrect. This is the amount of money Tilly earns in dollars per hour, not the amount of money Tilly earns for $39w$ hours of work.

Choice C is incorrect. This is the amount of money Tilly earns for w hours of work plus 39, not the amount of money Tilly earns for $39w$ hours of work.

Choice D is incorrect. This is the amount of money Tilly earns for w hours of work minus 39, not the amount of money Tilly earns for $39w$ hours of work.

Question Difficulty: Easy

Question ID aa0af439

Assessment	Test	Domain	Skill	Difficulty
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ID: aa0af439

A kangaroo has a mass of **28** kilograms. What is the kangaroo's mass, in grams? (**1 kilogram = 1,000 grams**)

- A. **28,000**
- B. **1,028**
- C. **972**
- D. **784**

ID: aa0af439 Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that a kangaroo has a mass of 28 kilograms and that 1 kilogram is equal to 1,000 grams. Therefore, the kangaroo's mass, in grams, is $28 \text{ kilograms} \times \frac{1,000 \text{ grams}}{1 \text{ kilogram}}$, which is equivalent to 28,000 grams.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID c0f5ceb0

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: c0f5ceb0

What length, in centimeters, is equivalent to a length of **51** meters? (**1 meter = 100 centimeters**)

- A. **0.051**
- B. **0.51**
- C. **5,100**
- D. **51,000**

ID: c0f5ceb0 Answer

Correct Answer: C

Rationale

Choice C is correct. Since 1 meter is equal to 100 centimeters, 51 meters is equal to $51 \text{ meters} \times \frac{100 \text{ centimeters}}{1 \text{ meter}}$, or 5,100 centimeters.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from dividing, rather than multiplying, 51 by 100.

Choice D is incorrect. This is the length, in millimeters rather than centimeters, that is equivalent to a length of 51 meters.

Question Difficulty: Easy

Question ID d0e32a44

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: d0e32a44

In a box of pens, the ratio of black pens to red pens is **8** to **1**. There are **40** black pens in the box. How many red pens are in the box?

- A. **5**
- B. **8**
- C. **40**
- D. **320**

ID: d0e32a44 Answer

Correct Answer: A

Rationale

Choice A is correct. It’s given that the ratio of black pens to red pens is 8 to 1. Therefore, there are $\frac{1}{8}$ as many red pens as black pens in the box. It’s also given that there are 40 black pens in the box. Therefore, the number of red pens is $\frac{1}{8}$ of the 40 black pens. Thus, the number of red pens is $40\frac{1}{8}$, or 5.

Choice B is incorrect. This is the number of black pens in the box for every red pen.

Choice C is incorrect. This is the number of black pens in the box.

Choice D is incorrect. This is the number of red pens in the box if the ratio of black pens to red pens is 1 to 8.

Question Difficulty: Easy

Question ID f7ad05cf

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: f7ad05cf

How many feet are equivalent to **34** yards? (**1 yard = 3 feet**)

ID: f7ad05cf Answer

Correct Answer: 102

Rationale

The correct answer is 102. It’s given that 1 yard is equivalent to 3 feet. Therefore, 34 yards is equivalent to $34 \text{ yards} \frac{3 \text{ feet}}{1 \text{ yard}}$, or 102 feet.

Question Difficulty: Easy

Question ID 4e15a974

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 4e15a974

An object travels at a constant speed of **6** centimeters per second. At this speed, what is the time, in seconds, that it would take for the object to travel **24** centimeters?

ID: 4e15a974 Answer

Correct Answer: 4

Rationale

The correct answer is 4. It's given that the object travels at a constant speed of 6 centimeters per second. The speed of the object can be written as $\frac{6 \text{ centimeters}}{1 \text{ second}}$. Let x represent the time, in seconds, it would take for the object to travel 24 centimeters. The value of x can be calculated by solving the equation $\frac{6 \text{ centimeters}}{1 \text{ second}} = \frac{24 \text{ centimeters}}{x \text{ seconds}}$, which can be written as $\frac{6}{1} = \frac{24}{x}$, or $6 = \frac{24}{x}$. Multiplying each side of this equation by x yields $6x = 24$. Dividing each side of this equation by 6 yields $x = 4$. Therefore, it would take the object 4 seconds to travel 24 centimeters.

Question Difficulty: Easy

Question ID 588427e5

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 588427e5

A special camera is used for underwater ocean research. The camera is at a depth of **39** fathoms. What is the camera's depth in feet? (**1 fathom = 6 feet**)

- A. **234**
- B. **117**
- C. **45**
- D. **7**

ID: 588427e5 Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that a special camera is used for underwater ocean research, and this camera is at a depth of 39 fathoms. It's also given that 1 fathom is equal to 6 feet. Thus, 39 fathoms is equivalent to $39 \text{ fathoms} \times \frac{6 \text{ feet}}{1 \text{ fathom}}$, or 234 feet. Therefore, the camera's depth, in feet, is 234.

Choice B is incorrect. This is the camera's depth, in feet, if the camera is at a depth of 19.5 fathoms.

Choice C is incorrect. This is the camera's depth, in feet, if the camera is at a depth of 7.5 fathoms.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 459ec83b

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 459ec83b

The population density of Worthington is **290** people per square mile. Worthington has a population of **92,800** people. What is the area, in square miles, of Worthington?

- A. **102,400**
- B. **93,090**
- C. **320**
- D. **32**

ID: 459ec83b Answer

Correct Answer: C

Rationale

Choice C is correct. It’s given that the population density of Worthington is 290 people per square mile and Worthington has a population of 92,800 people. Therefore, the area of Worthington is $92,800 \text{ people} \times \frac{1 \text{ square mile}}{290 \text{ people}}$, which is equivalent to $\frac{92,800 \text{ square miles}}{290}$, or 320 square miles.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 8ba43cc1

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 8ba43cc1

How many meters are equivalent to **2,300** centimeters? (**100 centimeters = 1 meter**)

- A. **0.043**
- B. **23**
- C. **2,400**
- D. **230,000**

ID: 8ba43cc1 Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that 100 centimeters is equal to 1 meter. Therefore, 2,300 centimeters is equivalent to $2,300 \text{ centimeters} \times \frac{1 \text{ meter}}{100 \text{ centimeters}}$, or 23 meters.

Choice A is incorrect. 0.043 meters is equivalent to 4.3, not 2,300, centimeters.

Choice C is incorrect. 2,400 meters is equivalent to 240,000, not 2,300, centimeters.

Choice D is incorrect. 230,000 meters is equivalent to 23,000,000, not 2,300, centimeters.

Question Difficulty: Easy

Question ID 1e261383

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 1e261383

A product costs **11.00** dollars per pound. What is the cost, in dollars, for **6** pounds of the product?

ID: 1e261383 Answer

Correct Answer: 66

Rationale

The correct answer is 66. It’s given that a product costs 11.00 dollars per pound. Therefore, the cost for 6 pounds of the product is $\frac{11.00 \text{ dollars}}{1 \text{ pound}} \times 6 \text{ pounds}$, which is equivalent to 66.00, or 66, dollars.

Question Difficulty: Easy

Question ID 8f5c6dcd

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 8f5c6dcd

A special camera is used for underwater ocean research. When the camera is at a depth of **58** fathoms, what is the camera's depth in feet? (**1 fathom = 6 feet**)

ID: 8f5c6dcd Answer

Correct Answer: 348

Rationale

The correct answer is 348. It's given that 1 fathom is equivalent to 6 feet. Therefore, 58 fathoms is equivalent to $58 \text{ fathoms} \frac{6 \text{ feet}}{1 \text{ fathom}}$, or 348 feet. Thus, when the camera is at a depth of 58 fathoms, the camera's depth, in feet, is 348.

Question Difficulty: Easy

Question ID 9764f80c

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 9764f80c

An object travels at a constant speed of **12** centimeters per second. At this speed, what is the time, in seconds, that it would take for the object to travel **108** centimeters?

- A. **9**
- B. **96**
- C. **120**
- D. **972**

ID: 9764f80c Answer

Correct Answer: A

Rationale

Choice A is correct. If the object travels 108 centimeters at a speed of 12 centimeters per second, the time of travel can be determined by dividing the total distance by the speed. This results in $\frac{108 \text{ centimeters}}{12 \text{ centimeters / second}}$, which is 9 seconds.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 9fb9a483

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 9fb9a483

How many yards are equivalent to **1,116** inches? (**1 yard = 36 inches**)

ID: 9fb9a483 Answer

Correct Answer: 31

Rationale

The correct answer is 31. It's given that 1 yard is equal to 36 inches. Therefore, 1,116 inches is equivalent to $1,116 \text{ inches} \times \frac{1 \text{ yard}}{36 \text{ inches}}$, or 31 yards.

Question Difficulty: Easy

Question ID 0a4927b1

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 0a4927b1

A printer produces posters at a constant rate of **42** posters per minute. At what rate, in posters per hour, does the printer produce the posters?

ID: 0a4927b1 Answer

Correct Answer: 2520

Rationale

The correct answer is 2,520. There are 60 minutes in one hour. At a rate of 42 posters per minute, the number of posters produced in one hour can be determined by $\frac{42 \text{ posters}}{1 \text{ minute}} \frac{60 \text{ minutes}}{1 \text{ hour}}$, which is 2,520 posters per hour.

Question Difficulty: Easy

Question ID 2d68e3c3

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 2d68e3c3

A customer spent **\$27** to purchase oranges at **\$3** per pound. How many pounds of oranges did the customer purchase?

ID: 2d68e3c3 Answer

Correct Answer: 9

Rationale

The correct answer is 9. It’s given that the customer spent \$ 27 to purchase oranges at \$ 3 per pound. Therefore, the number of pounds of oranges the customer purchased is $\$ 27 \frac{1 \text{ pound}}{\$ 3}$, or 9 pounds.

Question Difficulty: Easy

Question ID 5bcefcbe

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 5bcefcbe

How many teaspoons are equivalent to ~~44~~ tablespoons? (**3 teaspoons = 1 tablespoon**)

- A. ~~47~~
- B. ~~88~~
- C. **132**
- D. ~~176~~

ID: 5bcefcbe Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that 3 teaspoons is equivalent to 1 tablespoon. Therefore, 44 tablespoons is equivalent to $44 \text{ tablespoons} \frac{3 \text{ teaspoons}}{1 \text{ tablespoon}}$, or 132 teaspoons.

Choice A is incorrect. This is equivalent to approximately 15.66 tablespoons, not 44 tablespoons.

Choice B is incorrect. This is equivalent to approximately 29.33 tablespoons, not 44 tablespoons.

Choice D is incorrect. This is equivalent to approximately 58.66 tablespoons, not 44 tablespoons.

Question Difficulty: Easy

Question ID 6d36fc79

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	

ID: 6d36fc79

A mechanical device in a workshop produces items at a constant rate of **60** items per hour. At this rate, how many items will the mechanical device produce in **3** hours?

ID: 6d36fc79 Answer

Correct Answer: 180

Rationale

The correct answer is 180. It's given that a mechanical device produces items at a constant rate of 60 items per hour. This rate can be written as $\frac{60 \text{ items}}{1 \text{ hour}}$. Let x represent the number of items the mechanical device will produce in 3 hours at the given rate. It follows that $\frac{60 \text{ items}}{1 \text{ hour}} = \frac{x \text{ items}}{3 \text{ hours}}$, which can be written as $\frac{60}{1} = \frac{x}{3}$, or $60 = \frac{x}{3}$. Multiplying each side of this equation by 3 yields $180 = x$. Therefore, at the given rate, the mechanical device will produce 180 items in 3 hours.

Alternate approach: It's given that a mechanical device produces items at a constant rate of 60 items per hour. At this rate, the mechanical device will produce $\frac{60 \text{ items}}{1 \text{ hour}} \cdot 3 \text{ hours}$, or 180 items in 3 hours.

Question Difficulty: Easy