Math 3 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**ACT Practice Set 1 SHOW ALL WORK!!** Date\_\_\_\_\_\_\_\_

1. A car averages 27 miles per gallon. If gas costs $4.04 per gallon, which of the following is closest to how much the gas would cost for this car to travel 2,727 typical miles?

[A.](http://www.actstudent.org/sampletest/math/math_01.html#1a) $44.44

[B.](http://www.actstudent.org/sampletest/math/math_01.html#1b) $109.08

[C.](http://www.actstudent.org/sampletest/math/math_01.html#1c) $118.80

[D.](http://www.actstudent.org/sampletest/math/math_01.html#1d) $408.04

[E.](http://www.actstudent.org/sampletest/math/math_01.html#1e) $444.40

1. When *x* = 3 and *y* = 5, by how much does the value of 3*x*2 – 2*y* exceed the value of 2*x*2 – 3*y* ?

[F.](http://www.actstudent.org/sampletest/math/math_01.html#2f)  4

[G.](http://www.actstudent.org/sampletest/math/math_01.html#2g) 14

[H.](http://www.actstudent.org/sampletest/math/math_01.html#2h) 16

[J.](http://www.actstudent.org/sampletest/math/math_01.html#2j) 20

[K.](http://www.actstudent.org/sampletest/math/math_01.html#2k) 50

1. What is the value of *x* when 2*x* + 3 = 3*x* – 4 ?

[A.](http://www.actstudent.org/sampletest/math/math_01.html#3a)  –7

[B.](http://www.actstudent.org/sampletest/math/math_01.html#3b) negative one fifth

[C.](http://www.actstudent.org/sampletest/math/math_01.html#3c)  1

[D.](http://www.actstudent.org/sampletest/math/math_01.html#3d)one fifth

[E.](http://www.actstudent.org/sampletest/math/math_01.html#3e)  7

1. What is the greatest common factor of 42, 126, and 210 ?

[F.](http://www.actstudent.org/sampletest/math/math_01.html#4f)  2

[G.](http://www.actstudent.org/sampletest/math/math_01.html#4g)  6

[H.](http://www.actstudent.org/sampletest/math/math_01.html#4h) 14

[J.](http://www.actstudent.org/sampletest/math/math_01.html#4j) 21

[K.](http://www.actstudent.org/sampletest/math/math_01.html#4k) 42

1. Sales for a business were 3 million dollars more the second year than the first, and sales for the third year were double the sales for the second year. If sales for the third year were 38 million dollars, what were sales, in millions of dollars, for the first year?

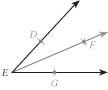
[A.](http://www.actstudent.org/sampletest/math/math_01.html#5a) 16

[B.](http://www.actstudent.org/sampletest/math/math_01.html#5b) 17.5

[C.](http://www.actstudent.org/sampletest/math/math_01.html#5c) 20.5

[D.](http://www.actstudent.org/sampletest/math/math_01.html#5d) 22

[E.](http://www.actstudent.org/sampletest/math/math_01.html#5e) 35

1. In the figure below, ray EFwas constructed starting from rays EDand EG. By using a compass, *D* and *G* were marked equidistant from *E* on rays EDand EG. The compass was then used to locate a point *F*, distinct from *E*, so that *F* is equidistant from *D* and *G*. For all constructions defined by the above steps, the measures of angle*DEF* and angle*GEF*:

[F.](http://www.actstudent.org/sampletest/math/math_01.html#6f) are equal.

[G.](http://www.actstudent.org/sampletest/math/math_01.html#6g) are NOT equal.

[H.](http://www.actstudent.org/sampletest/math/math_01.html#6h) sum to 30°.

[J.](http://www.actstudent.org/sampletest/math/math_01.html#6j) sum to 45°.

[K.](http://www.actstudent.org/sampletest/math/math_01.html#6k) sum to 60°.

1. Abandoned mines frequently fill with water. Before an abandoned mine can be reopened, the water must be pumped out. The size of pump required depends on the depth of the mine. If pumping out a mine that is *D* feet deep requires a pump that pumps a minimum of D squared over 25+ 4*D* – 250 gallons per minute, pumping out a mine that is 150 feet deep would require a pump that pumps a minimum of how many gallons per minute?

[A.](http://www.actstudent.org/sampletest/math/math_01.html#7a)  362

[B.](http://www.actstudent.org/sampletest/math/math_01.html#7b)  500

[C.](http://www.actstudent.org/sampletest/math/math_01.html#7c)  800

[D.](http://www.actstudent.org/sampletest/math/math_01.html#7d) 1,250

[E.](http://www.actstudent.org/sampletest/math/math_01.html#7e) 1,750

1. The length, in inches, of a box is 3 inches less than twice its width, in inches. Which of the following gives the length, *l* inches, in terms of the width, *w* inches, of the box?

[F.](http://www.actstudent.org/sampletest/math/math_01.html#8f) *l* = one half*w* + 3

[G.](http://www.actstudent.org/sampletest/math/math_01.html#8g) *l* =  *w* + 3

[H.](http://www.actstudent.org/sampletest/math/math_01.html#8h) *l* =  *w* – 3

[J.](http://www.actstudent.org/sampletest/math/math_01.html#8j) *l* = 2*w* + 3

[K.](http://www.actstudent.org/sampletest/math/math_01.html#8k) *l* = 2*w* – 3

**Incorrect**

Twice the width is 2*w*, and 3 less than a number means to subtract 3 from the number.

**Incorrect**

Remember that *w* is multiplied by 2, and then 3 is subtracted from the result.

**Incorrect**

Did you forget to multiply *w* by 2 ?

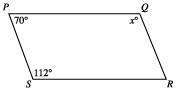
**Incorrect**

Remember that 3 less than a number means to subtract 3 from the number.

**Correct!**

You did the problem correctly. Twice a number means to multiply the number by 2, and 3 less than a number means to subtract 3 from the number. Combining these, you get *l* = 2*w* – 3.

1. In quadrilateral *PQRS* below, sides *PS* and *QR* are parallel for what value of *x* ?



[A.](http://www.actstudent.org/sampletest/math/math_01.html#9a) 158

[B.](http://www.actstudent.org/sampletest/math/math_01.html#9b) 132

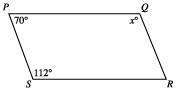
110o

[C.](http://www.actstudent.org/sampletest/math/math_01.html#9c) 120

[D.](http://www.actstudent.org/sampletest/math/math_01.html#9d) 110

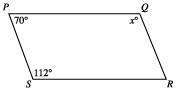
[E.](http://www.actstudent.org/sampletest/math/math_01.html#9e)  70

**Incorrect**



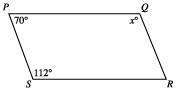
Because *PS* is parallel to *QR*, the sum of the measures of angles angle*S* and angle*R* is 180°. So, 180° – 112° = 68°, and the measure of angle*R* is 68°. However, to find *x* you do not just add 90° to the measure of angle*R*. Think about the sum of the angles of a quadrilateral.

**Incorrect**



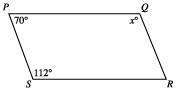
Remember that the sum of the measures of the angles in a quadrilateral is 360°.

**Incorrect**



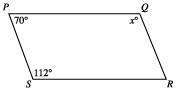
Did you subtract correctly? Recheck your work.

**Correct!**



The correct answer is D. The question states that *PS* and *QR* are parallel. If you treat *PQ* as a transversal, then angle*P* and angle*Q* are interior angles on the same side of a transversal, so their measures add up to 180°. Since the measure of angle*P* is 70°, the measure of angle*Q* is 180° – 70° = 110°.

**Incorrect**



Angles angle*P* and angle*Q* are not corresponding angles on the same side of a transversal.

1. How many irrational numbers are there between 1 and 6 ?

[F.](http://www.actstudent.org/sampletest/math/math_01.html#10f)  1

[G.](http://www.actstudent.org/sampletest/math/math_01.html#10g)  3

[H.](http://www.actstudent.org/sampletest/math/math_01.html#10h)  4

[J.](http://www.actstudent.org/sampletest/math/math_01.html#10j) 10

[K.](http://www.actstudent.org/sampletest/math/math_01.html#10k) Infinitely many

1. A typical high school student consumes 67.5 pounds of sugar per year. As part of a new nutrition plan, each member of a track team plans to lower the sugar he or she consumes by at least 20% for the coming year. Assuming each track member had consumed sugar at the level of a typical high school student and will adhere to this plan for the coming year, what is the maximum number of pounds of sugar to be consumed by each track team member in the coming year?

[A.](http://www.actstudent.org/sampletest/math/math_01.html#11a) 14

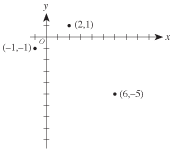
[B.](http://www.actstudent.org/sampletest/math/math_01.html#11b) 44

[C.](http://www.actstudent.org/sampletest/math/math_01.html#11c) 48

[D.](http://www.actstudent.org/sampletest/math/math_01.html#11d) 54

[E.](http://www.actstudent.org/sampletest/math/math_01.html#11e) 66

1. In the standard (*x*, *y*) coordinate plane below, 3 of the vertices of a rectangle are shown. Which of the following is the 4th vertex of the rectangle?



[F.](http://www.actstudent.org/sampletest/math/math_01.html#12f) (3,–7)

[G.](http://www.actstudent.org/sampletest/math/math_01.html#12g) (4,–8)

[H.](http://www.actstudent.org/sampletest/math/math_01.html#12h) (5,–1)

[J.](http://www.actstudent.org/sampletest/math/math_01.html#12j) (8,–3)

[K.](http://www.actstudent.org/sampletest/math/math_01.html#12k) (9,–3)