

ACT: Critical Topics

# Start Purple Worksheet

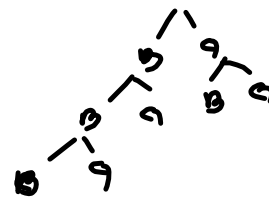
Period\_

Find the missing term or terms in each arithmetic sequence. ⊕

1) ..., 18, 16, 14, ...

Find the missing term or terms in each geometric sequence. ⊗

2) ..., -1, 6, -36, ...



Find the probability of each event.

3) A politician is about to give a campaign speech and is holding a stack of seven cue cards, of which the first 3 are the most important. Just before the speech, he drops all of the cards and picks them up in a random order. What is the probability that cards #1, #2, and #3 are still in order on the top of the stack?

$$\frac{1}{7} \cdot \frac{1}{6} \cdot \frac{1}{5} = \frac{1}{210} = .5\%$$

4) One day, nine babies are born at a hospital. Assuming each baby has an equal chance of being a boy or girl, what is the probability that exactly seven of the nine babies are girls?

$$\underbrace{\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}}_7 = \frac{9}{2^7} = \frac{9}{128} = 7\%$$

Write the slope-intercept form of the equation of each line given the slope and y-intercept.

5) Slope = -3, y-intercept = 2

$$y = mx + b$$

$$y = -3x + 2$$

Write the slope-intercept form of the equation of the line through the given point with the given slope.

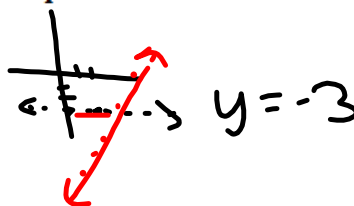
6) through: (2, -3), slope = 2

$$-3 = 0(2) + b$$

$$-3 = b$$

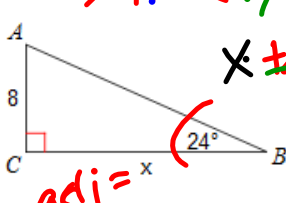
$$y = 0x - 3$$

$$y = -3$$



Find the measure of each side indicated. Round to the nearest tenth.

SOH CAH TOA

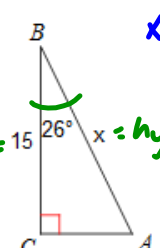
7)   $\text{opp} = 8$ ,  $\text{adj} = x$ ,  $\angle = 24^\circ$

~~$\tan 24 = \frac{8}{x}$~~

$x = \frac{8}{\tan 24}$

$x = 17.96$

$x = 18.0$

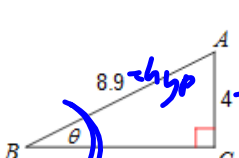
8)   $\text{adj} = 15$ ,  $x = \text{hyp}$ ,  $\angle = 26^\circ$

~~$\cos 26 = \frac{15}{x}$~~

$x = \frac{15}{\cos 26}$

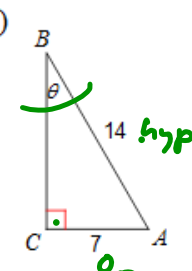
$x = 16.7$

Find the measure of each angle indicated. Round to the nearest tenth.

9)   $\text{hyp} = 8.9$ ,  $\text{opp} = 4$ ,  $\angle = \theta$

$\sin^{-1}\left(\frac{4}{8.9}\right) = \theta$

$\theta = 26.7$

10)   $\text{hyp} = 14$ ,  $\text{opp} = 7$ ,  $\angle = \theta$

$\sin^{-1}\left(\frac{7}{14}\right) = \theta$

$\theta = 30^\circ$

Find the mean for each data set.

11) Mens Heights (Inches)

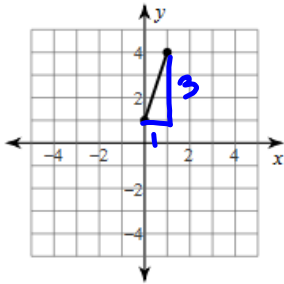
72	70	66	70	71	72	80
73	72	72	75	75	74	67
66	70					

$\frac{+ +}{\#} = \frac{1145}{16} = 71.6$



Find the distance between each pair of points.

12)



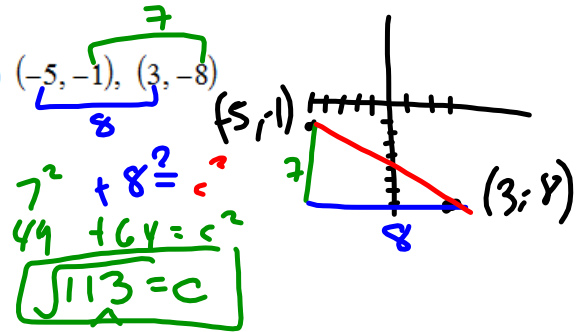
$$1^2 + 3^2 = c^2$$

$$1 + 9 = c^2$$

$$10 = c^2$$

$$\sqrt{10} = c$$

13)



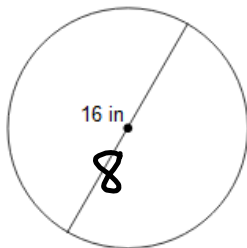
$$7^2 + 8^2 = c^2$$

$$49 + 64 = c^2$$

$$\sqrt{113} = c$$

Find the area of each. Use your calculator's value of  $\pi$ . Round your answer to the nearest tenth.

14)



$$A = \pi r^2$$

$$C = 2\pi r \sim d\pi$$

$$A = \pi 8^2$$

$$A = \pi 64$$

$$A = 201.1$$

Find the radius of each circle. Use your calculator's value of  $\pi$ . Round your answer to the nearest tenth.

15) area = 437.4 yd<sup>2</sup>

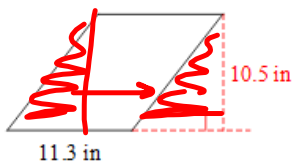
$$A = \pi r^2$$

$$\sqrt{\frac{437.4}{\pi}} = r$$

$$11.8 = r$$

Find the area of each.

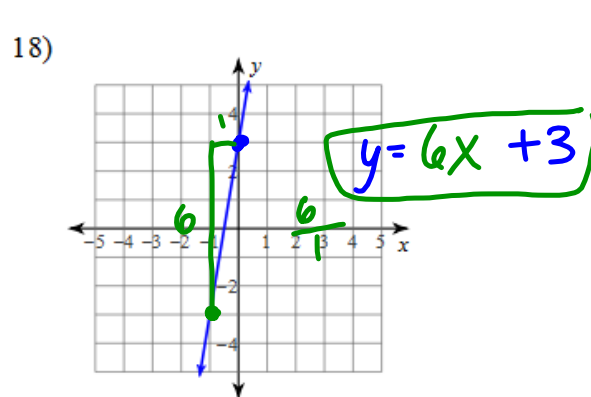
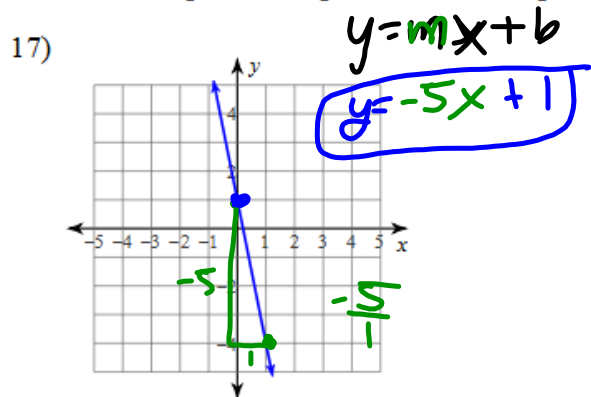
16)



$$l \cdot w$$

$$11.3 \times 10.5 = 118.65 \text{ in}^2$$

Write the slope-intercept form of the equation of each line.



Solve each equation with the quadratic formula.

19)  $3b^2 - 4b - 11 = 0$   $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(3)(-11)}}{2(3)}$

$\frac{4 \pm \sqrt{16 + 132}}{6}$

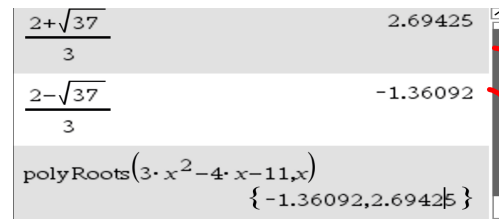
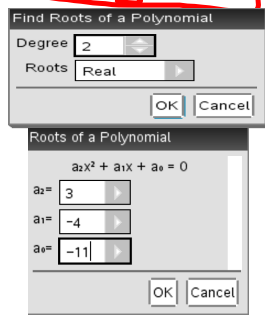
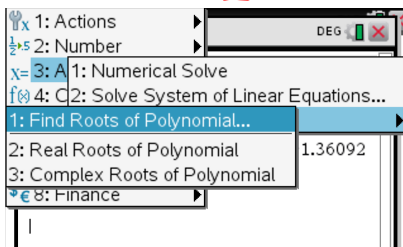
$\frac{4 \pm \sqrt{148}}{6}$  (with 74 and 37 circled and arrows pointing to 148)

$\div 2 \quad \frac{4 \pm 2\sqrt{37}}{6} = \frac{2 \pm \sqrt{37}}{3}$

20)  $n^2 - 4n - 12 = 0$

$(n-6)(n+2) = 0$

$n = 6, -2$



same!  
😊

