CC Geometry Final Exam REVIEW **Name:** Key

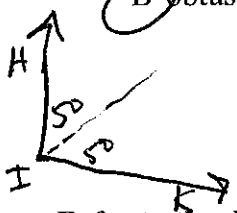
Fall 2015

Choose the best answer

1. $\overline{IJ}$ bisects $\angle HIK$. Classify $\angle HIK$ if $m\angle HIJ = 50°$.

A acute C right

B obtuse D straight

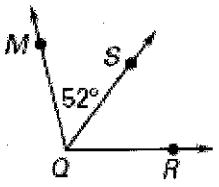


2. *Multiple Choice* $\overrightarrow{QS}$ bisects $\angle MQR$. What is the $m\angle MQR$?

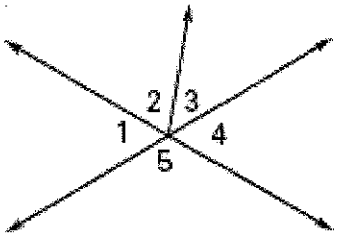
(A) 26° (B) 52°

(C) 104° (D) 13°

(E) 38°



Refer to the diagram to answer 3-4.



3. Which angles are vertical angles?

(A) $\angle 1$ and $\angle 2$ (B) $\angle 1$ and $\angle 5$

(C) $\angle 3$ and $\angle 5$ (D) $\angle 1$ and $\angle 4$

(E) $\angle 4$ and $\angle 5$

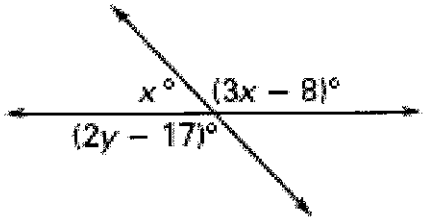
4. Which angles are supplementary?

(A) $\angle 1$ and $\angle 4$ (B) $\angle 4$ and $\angle 5$

(C) $\angle 1$ and $\angle 5$ (D) B and C

(E) all of these

5. In the diagram, what are the values of x and y?



$4x - 8 = 180$
$4x = 188$
$x = 47$

$2y - 17 + 47 = 180$
$2y + 30 = 180$
$2y = 150$
$y = 75$

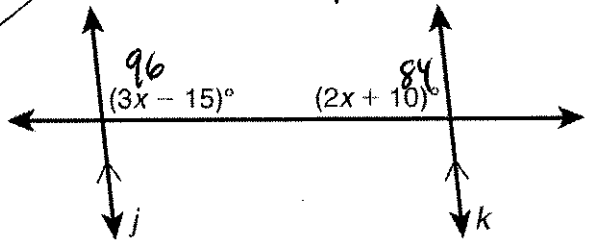
(A) $x = 47, y = 75$ (B) $x = 47, y = 74$

(C) $x = 75, y = 47$ (D) $x = 71, y = 51$

(E) $x = 45, y = 77$

6. If $j \parallel k$, which could be one of the angle measures?

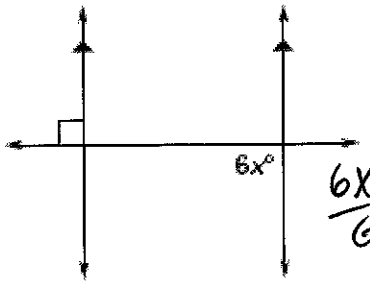
$5x - 5 = 180$
$x = 37$



A 25° C 60°

B 37° D 84°

7. In the diagram, find the value of x.

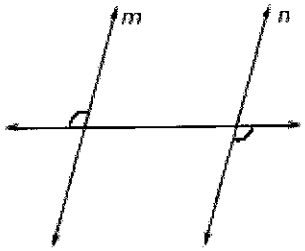


$\frac{6x}{6} = \frac{90}{6}$

$x = 15$

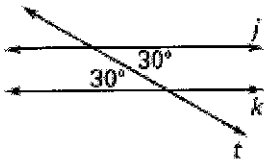
(A) 24 (B) 12 (C) 30 (D) 90
(E) 15

8. State the postulate or theorem you would use to prove that lines m and n are parallel.



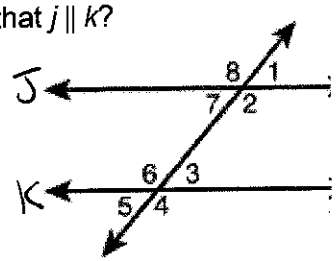
(A) alternate interior angles converse
(B) alternate exterior angles converse
(C) consecutive interior angles converse
(D) corresponding angles converse
(E) vertical angles theorem

9. . ***Multiple Choice***
Which theorem or postulate shows $j \parallel k$?



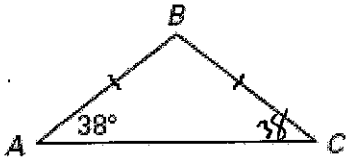
(A) Alt. Int. ∡s Converse
(B) Cons. Int. ∡s Converse
(C) Alt. Ext. ∡s Converse
(D) Corresp. ∡s Converse
(E) None of these

10. Which information CANNOT be used to prove that that $j \parallel k$?



A) $\angle 7 \cong \angle 3$
B) $\angle 7$ is supplementary to $\angle 6$.
C) $\angle 1 \cong \angle 5$
D) $\angle 1$ is supplementary to $\angle 2$

11. What is the measure of $\angle B$?



(A) 90°
(B) 38°
(C) 104°
(D) 52°
(E) Cannot be determined

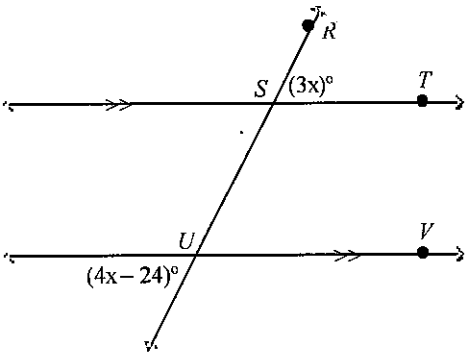
180
-38
-38
104

12. Which best describes the triangle in #13

A) Acute Isosceles
B) Obtuse Isosceles
C) Acute Scalene
D) Right Isosceles

21. What is m$\angle RST$?

A) 24
B) 72
C) 108
D) 180



$4x-24=3x$

$x=24$

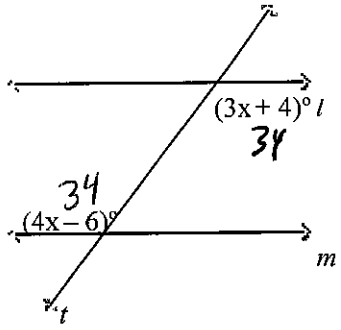
$3(24)=72^\circ$

22. If $l \parallel m$, which could be one of the angle measures?

A 7°
B 10°
C 34°
D 44°

$4x-6=3x+4$

$x=10$



Factor the following quadratics.

30. $x^2+11x+30$

$(x+6)(x+5)$

31. x^2-5x+6

$(x-3)(x-2)$

32. $2x^2+17x+2$

~~$x^2+17x+4$~~ prime

~~EX~~

33. $-2x^2-5x-3$

$-(2x^2+5x+3)$

x^2+5x+6

$-(x+\frac{3}{2})(x+2)$

$-(2x+3)(x+1)$

34. $-6x^2-11x-3$

$-1(6x^2+11x+3$

$x^2+11x+18$

$(x+\frac{9}{6})(x+\frac{2}{6})$

$-(x+\frac{3}{2})(x+\frac{1}{3})$

$-(2x+3)(3x+1)$

Solve the following quadratics.

35. $f(x)=3x^2-12x$

$0=3x(x-4)$

$3x=0 \quad x-4=0$

$x=0 \quad x=4$

36. $x^2-15x=-54$

$x^2-15x+54=0$

$(x-9)(x-6)=0$

$x=9 \quad x=6$

37. $2x^2+18x=-28$

$2x^2+18x+28=0$

$2(x^2+9x+14)=0$

$2(x+7)(x+2)=0$

$x=-7 \quad x=-2$

38. $f(x)=2x^2+x-10$

$0=2x^2+x-10$

$=(2x+5)(x-2)$

$x=-5/2 \quad x=2$

x^2+x-20

$(x+5)(x-4)$

39. $25x^2+400=0$

$25(x^2+16)=0$

$x^2+16=0$

$\sqrt{x^2}=\sqrt{-16}$

$x=\pm 4i$

Factor each trinomial.

40. x^2+6x+8

$(x+4)(x+2)$

41. x^2+5x+6

$(x+5)(x+1)$

42. $x^2-5x-24$

$(x-8)(x+3)$

Find the zeros of each function by factoring. (set = to zero)

43. $f(x)=x^2-8x+12$

$0=(x-6)(x-2)$ $x-6=0$ $x-2=0$

$x=6$ $x=2$

44. $g(x)=3x^2+12x$

$0=3x(x+4)$ $3x=0$ $x+4=0$

$x=0$ $x=-4$

Solve each equation.

45. $3x^2-4=68$

$3x^2-72=0$

$3(x^2-24)=0$

$\sqrt{x^2}=\sqrt{24}$

$x=\pm\sqrt{24}$

$\sqrt{24}$

$6\cdot 4$

$2\cdot 2$

$x=\pm 2\sqrt{6}$

46. $x^2-10x+25=27$

$\left(\frac{-10}{2}\right)^2$

$x^2-10x-2=0$

$x^2-10x+25=2+25$

$\sqrt{(x-5)^2}=\sqrt{27}$

$x-5=\pm\sqrt{27}$

$+5 \quad +5$

$x=5\pm\sqrt{27}$

Complete the square for each equation.

47. $x^2-2x+\underline{1}$ $\left(\frac{b}{2}\right)^2=\left(\frac{-2}{2}\right)^2$

48. $x^2+5x+\underline{\frac{25}{4}}$ $\left(\frac{5}{2}\right)^2=\frac{25}{4}$

49. Write the function in vertex form and identify the vertex: $f(x)=x^2-10x-13$

vertex $-$ $x=\frac{-b}{2a}=\frac{10}{2}=5$ y of vertex $y=(5)^2-10(5)-13$

$y=25-50-13$

$y=-25-13$

$y=-38$

vertex $(5,-38)$

$y=(x-5)^2-38$

Matching: Match the correct word to its definition.

A. parabola B. vertex C. axis of symmetry

D. maximum E. minimum F. reflection

D 50. The highest point on the graph and is determined by the y value.

B 51. The highest or lowest point on the graph of a quadratic function.

F 52. A transformation in which the graph is flipped over the x-axis.

E 53. The lowest point on the graph and is determined by the y value.

A 54. A "u-shaped" graph that models a quadratic function.

C 55. The line through the vertex of a parabola that divides the parabola into 2 congruent parts.

Solve the following quadratics. (set to zero)

56. $x^2-24=-10x$

$x^2+10x-24=0$

$a=1 \quad b=10 \quad c=-24$

$x=\frac{-10\pm\sqrt{100-4(1)(-24)}}{2(1)}$

$x=\frac{-10\pm\sqrt{196}}{2}$ $x=\frac{-10\pm 14}{2}$

57. $7x^2-6=-97$

$\frac{7x^2}{7}=\frac{-91}{7}$

$\sqrt{x^2}=\sqrt{\frac{-91}{7}}$

$x=i\pm\sqrt{\frac{91}{7}}$

58. $(x-2)^2-12=0$

$\sqrt{(x-2)^2}=\sqrt{12}$

$x-2=\pm 2\sqrt{3}$

$x=2\pm 2\sqrt{3}$

59. Identify the axis of symmetry, vertex and max or min for the quadratic function $f(x)=x^2+6x+4$.

AOS: $x=\frac{-b}{2a}=\frac{-6}{2}=-3=x$

Vertex: $(-3,-5)$

Max or Min and value: $(-3,-5)$

$y=(-3)^2+6(-3)+(4)$

$y=9-18+4$

$y=-9+4=-5$

60. Solve for x. $3x^2+27=0$

$3(x^2+9)=0$

$x^2+9=0$

$\sqrt{x^2}=\sqrt{-9}$ $\quad x=\pm 3i$

61. Write the conjugate of $1+14i$. $\quad 1-14i$

62. Simplify. $\sqrt{-144}$ $\quad 12i$

63. Solve for x. $x^2+49=0$

$\sqrt{x^2}=\sqrt{-49}$

$x=\pm 7i$

64. Simplify. $(4-2i)+(-4-5i)$

$0-7i \rightarrow -7i$

65. Simplify. $(3-i)-(-3+i)$

$3-i+3-i$

$6-2i$

66. Simplify. $(3-5i)(2+9i)$

$6+27i-10i-45i^2$ $\quad (-1)$

$51+17i$

67. Solve for x. $2x^2+200=100$

$2x^2=-100$

$x^2=-50$

$x=\pm i\sqrt{50}$ $\quad (-1)$

$x=\pm 5i\sqrt{2}$

68. Simplify. $\frac{2+3i}{4-i}\cdot\frac{(4+i)}{(4+i)}=\frac{8+2i+12i+3i^2}{16+4i-4i-i^2}$

$=\frac{5+14i}{17}$

69. Graph $y=(x-1)^2+3$

70. Graph $y=2x^2-4x+1$

Put in graphing calc

71. $y=-(x-1)(x-4)$

70)

61)