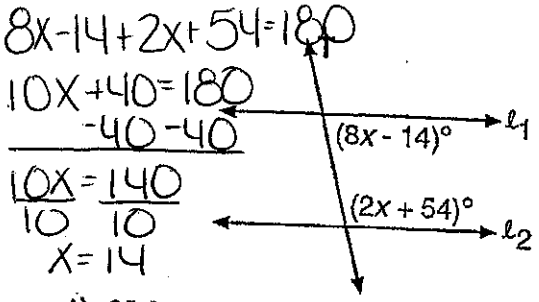
Name: Key

Parallel Lines

Geometry

Part1: Each question is worth 3 points.

1) What is the value of x that makes $\ell_1 \parallel \ell_2$?



$8x-14+2x+54=180$

$10x+40=180$

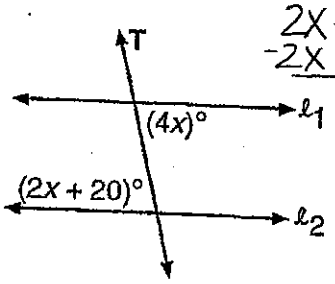
$-40 \quad -40$

$\frac{10x}{10} = \frac{140}{10}$

$x = 14$

A) 23.3
B) 22
● 14
D) 11.3

2) What is the value of x that makes $\ell_1 \parallel \ell_2$?



$2x+20=4x$

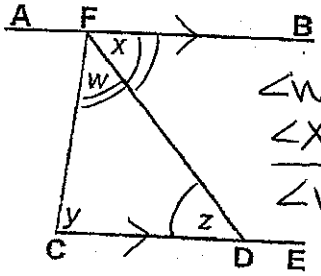
$-2x \quad -2x$

$\frac{20}{2} = \frac{2x}{2}$

$10 = x$

A) 26.6
● 10
C) 8
D) 11.6

3) In the accompanying diagram, $\overline{AFB} \parallel \overline{CDE}$. If $\overline{FD}$ bisects $\angle CFB$, which statement is true?



Transitive

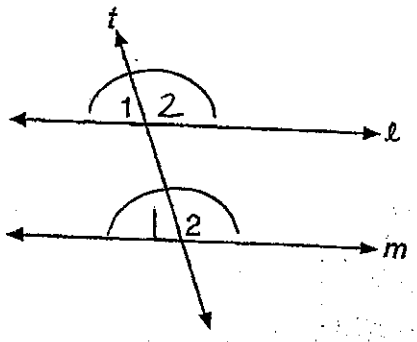
$\angle w \cong \angle x$

$\angle x \cong \angle z$

$\angle w \cong \angle z$

A) $\angle x \cong \angle y$
B) $\angle y \cong \angle z$
C) $\angle w \cong \angle y$
● $\angle w \cong \angle z$

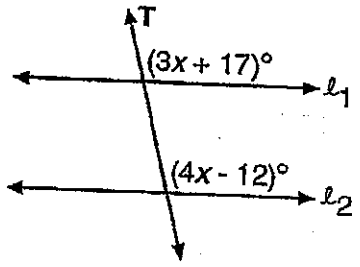
4) In the accompanying diagram, parallel lines ℓ and m are cut by transversal t.



Which statement about angles 1 and 2 must be true?

A) $\angle 1 \cong \angle 2$
B) $\angle 1$ and $\angle 2$ are right angles
C) $\angle 1$ is a complement to $\angle 2$
● $\angle 1$ is a supplement to $\angle 2$

5) What is the value of x that makes $\ell_1 \parallel \ell_2$?



$3x+17=4x-12$

$-3x \quad -3x$

$17 = x-12$

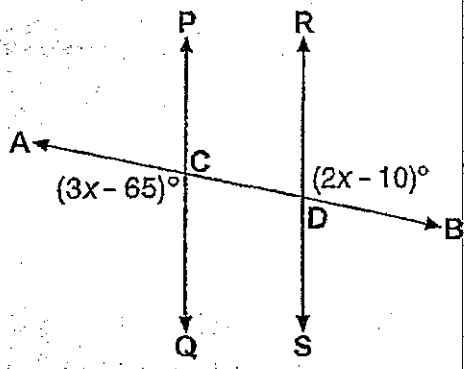
$+12 \quad +12$

$29 = x$

A) 26.4
B) 5
C) 25
● 29

Part 2: Each question is worth 4 points. Show all work for partial credit.

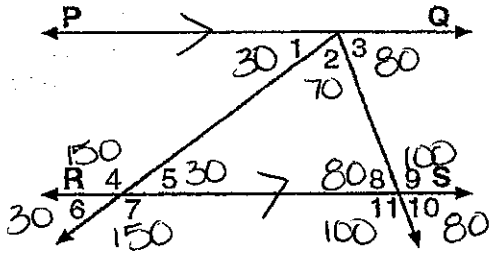
6) In the accompanying diagram, $\overleftrightarrow{AB}$ intersects $\overleftrightarrow{PQ}$ and $\overleftrightarrow{RS}$ at C and D, respectively.



If $\overleftrightarrow{PQ} \parallel \overleftrightarrow{RS}$, $m\angle RDB = (2x - 10)°$, and $m\angle QCA = (3x - 65)°$, find x.

$3x - 65 = 2x - 10$
$-2x \quad -2x$
$x - 65 = -10$
$+65 \quad +65$
$x = 55$

7)

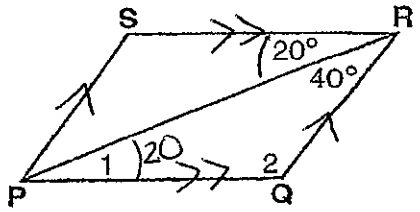


If $\overleftrightarrow{PQ} \parallel \overleftrightarrow{RS}$, $m\angle 5 = 30°$, and $m\angle 8 = 80°$, find the measure of the remaining angles in the given figure.

$180 - 30 = 150$ $\quad 180 - 80 = 100$ $\quad 180 - 110 = 70$

$m\angle 1 = 30$
$m\angle 2 = 70$
$m\angle 3 = 80$
$m\angle 4 = 150$
$m\angle 5 = 30$
$m\angle 6 = 30$
$m\angle 7 = 150$
$m\angle 8 = 80$
$m\angle 9 = 100$
$m\angle 10 = 80$
$m\angle 11 = 100$

8) If $\overline{PQ} \parallel \overline{SR}$ and $\overline{PS} \parallel \overline{QR}$, find $m\angle 1$ and $m\angle 2$.

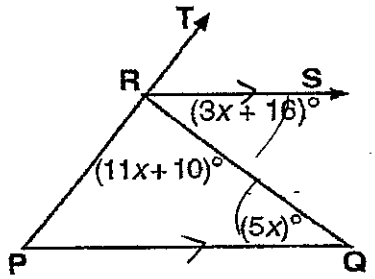


$20 + 40 + x = 180$
$60 + x = 180$
$-60 \quad -60$
$x = 120$

$m\angle 1 = 20$
$m\angle 2 = 120$

Questions 9 and 10 refer to the following:

In the figure below, $\overline{RS} \parallel \overline{PQ}$.



9) Find the value of x.

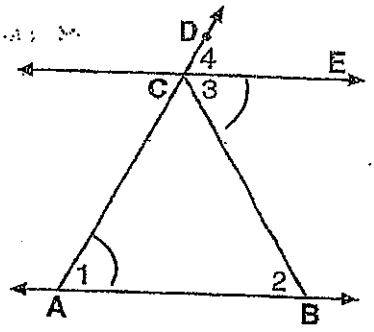
$5x = 3x + 16$
$-3x \quad -3x$
$\frac{2x}{2} = \frac{16}{2}$
$x = 8$

10) Find the $m\angle PRQ$.

$11(8) + 10$
$88 + 10$
98

Part3: Show all work for each question.

11)

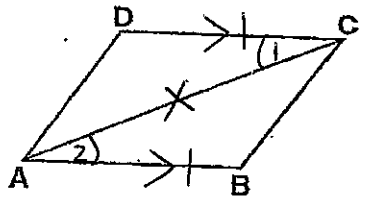


Given: $\angle 1 \cong \angle 3$
$\overrightarrow{CE}$ bisects $\angle DCB$

Prove: $\overrightarrow{CE} \parallel \overrightarrow{AB}$

S	R
① $\angle 1 \cong \angle 3$	① Given
② CE bisects $\angle DCB$	② Given
③ $\angle 3 \cong \angle 4$	③ An $\angle$ bisector divides an $\angle$ into 2 $\cong$ $\angle$s
④ $\angle 1 \cong \angle 4$	④ Transitive
⑤ CE $\parallel$ AB	⑤ If corresponding $\angle$s are $\cong$, the lines cut by the transversal are $\parallel$

12)



Given: $\overline{AB} \parallel \overline{DC}$
$\overline{AB} \cong \overline{DC}$

Prove: $\overline{AD} \cong \overline{CB}$

S	R
① AB $\parallel$ DC	① Given
② $\angle 1 \cong \angle 2$	② $\parallel$ lines cut by a transversal form $\cong$ alternate interior $\angle$s
③ $AB \cong DC$	③ Given
④ $AC \cong AC$	④ Reflexive
⑤ $\triangle ACD \cong \triangle CAB$	⑤ SAS $\cong$ SAS
⑥ $AD \cong CB$	⑥ CPCTC